

Edwin Granville Bates

Inventor of several Numbering Machines

That are at the base of the following companies:

Bates Manufacturing Company

Bates Machine Company

Bates Numbering Machine Company

Roberts Numbering Machine Company

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NEXT ITEM

Klasse 15. Druckerei.

No. 67770 vom 29. Juli 1891.

EDWIN GRANVILLE BATES in New-York, V. St. A. —
Numerirstempel.

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Die mit Innenschaltzahnung versehenen Typen-
räder *a* bewegen sich auf einer Nabe *b* in deren

schwingt. Ueber den Typenrädern liegen zwei Scheiben *e f*. Erstere hat eine Aussparung *g* und auf ihrem inneren vorstehenden Rande Schaltzähne *h*

Fig. 1.

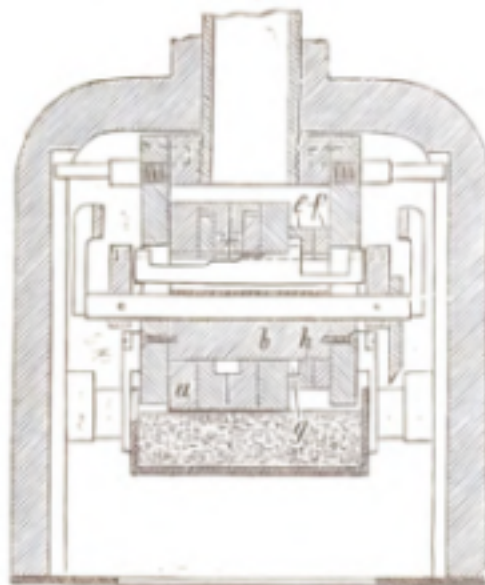


Fig. 2.

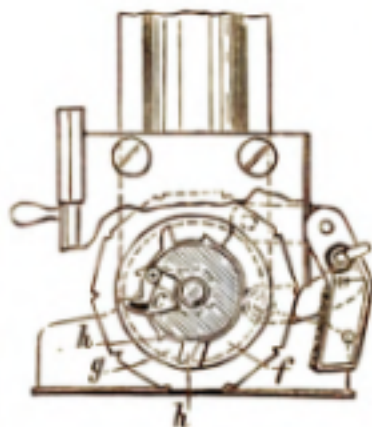


Fig. 3.

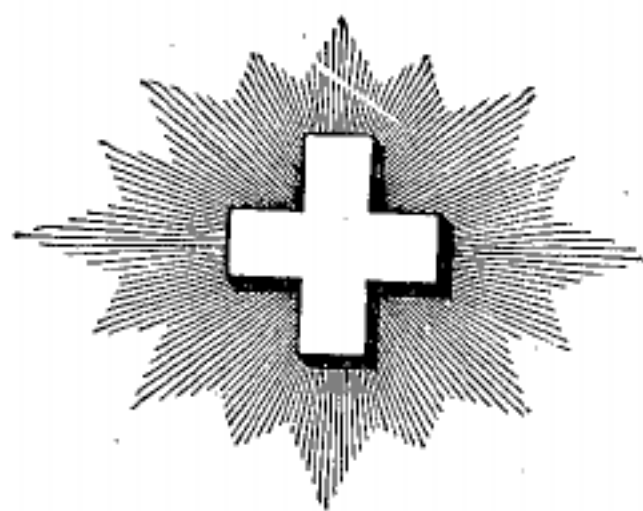


von zwei verschiedenen Tiefen, derart, daß je ein flacher und ein tiefer Zahn abwechselnd auf einander folgt. Scheibe *f* hat keine Innenverzahnung. Der Schaltklinenrahmen *d* läßt sich durch Hand in seiner Achsenrichtung verstellen, so daß dessen äußerste Klinke *k* je nach Bedarf in die Aussparung *g* oder in die Bahn der Zähne *h* oder endlich in die Ebene der Scheibe *f* eintritt. Entsprechend diesen Stellungen drückt der Stempel dann entweder fortlaufende Zahlen, oder jede Zahl zweimal, oder endlich stets dieselbe Zahl.



NEXT ITEM

BUREAU FÉDÉRAL DE LA



PROPRIÉTÉ INTELLECTUELLE

EXPOSÉ D'INVENTION

Brevet N° 4122

28 juillet 1891, 7¹/₄ h., p.

Classe 48

EDWIN-GRANVILLE BATES, à NEW-YORK.

Machine à numérotter à la main perfectionnée.

Mon invention a pour objet une machine à numérotter qui soit facilement ajustable, de manière à ce qu'on puisse à volonté imprimer le même nombre ou chiffre un nombre indéfini de fois, ou bien répéter un nombre quelconque donné deux fois seulement, puis imprimer automatiquement deux fois le nombre suivant et ainsi de suite, ou bien imprimer, enfin, la suite des nombres consécutivement.

Les changements de marche de la machine sont contrôlés par un seul levier ajustable qui peut servir d'aiguille indicatrice; dans ce but, ce levier est préférablement disposé devant une échelle indiquant la nature du travail de la machine, pour chaque position du levier; cette machine est munie d'un tampon susceptible d'être amené en position pour être approvisionné d'encre sans risque, pour l'opérateur, de se salir les doigts; toute la machine occupe relativement un petit espace; sa construction est économique, et les avantages du travail qu'elle produit sont très appréciables.

Pour la mise en pratique de mon invention, j'emploie préférablement pour actionner le nombre voulu de roues à caractères destinées à effectuer l'impression d'une manière consécutive, une disposition de cliquets oscillants situés dans un espace annulaire réservé dans

lesdites roues à caractères, qui sont munies du nombre usuel de creux profonds et peu profonds; grâce à cette disposition, on obtient une grande économie de place, de prix de fabrication et plus d'efficacité dans le travail. Outre les roues à impression, j'emploie deux roues de commande, une pour régler la machine dans le but d'obtenir l'impression du même nombre deux fois, ou, comme on dit „en doublant“, et l'autre pour régler la machine afin d'obtenir l'impression du même nombre d'une manière continue, ou „à répétition“. Les deux roues de réglage sont situées en ligne avec les roues à caractères, la première et munie de dix creux alternativement profonds et peu profonds, de sorte qu'elle ne sera mue qu'à chaque double oscillation de son cliquet; l'autre ne comporte sur sa circonférence aucune encoche et ne subit, par suite, aucune action de la part des cliquets. Les cliquets sont portés de préférence sur l'arbre principal et on peut les former comme des dents de la même pièce. Cet arbre à cliquets est suspendu, de manière à pouvoir être déplacé d'une seule pièce, de façon que, lorsqu'on veut imprimer en doublant, la dent qui doit actionner la roue réglant le mouvement en double puisse être amenée en position pour fonctionner, et que l'on puisse également

l'amener en position, relativement à la roue réglant l'impression à répétition; dans cette position, toutes les autres dents de cliquets sont maintenues en dehors de leur position de fonctionnement.

L'arbre à cliquets est préférablement supporté par le moyeu fixe qui supporte les roues à caractères, et il traverse complètement ce moyeu qui est fou sur lui, de façon à permettre son déplacement. Ce mouvement de déplacement s'effectue préférablement au moyen d'un index de changement, d'un levier ou de tout autre dispositif, fonctionnant devant un cercle convenablement gradué; le cadre mobile est tenu dans l'une quelconque de ses positions déterminées par la fixation du levier ou de l'indicateur de changement; des organes sont disposés pour fonctionner positivement, afin d'obtenir la fixation au point voulu.

En outre, un arrêt est disposé pour le cadre à mouvement alternatif des roues à caractères, et maintient ce cadre dans une position donnée, tandis qu'on applique de l'encre sur le tampon; ce dernier est également muni d'un arrêt qui, lorsque l'enveloppe des roues à caractères est à l'arrêt, peut être manipulé pour tourner le tampon en position voulue pour recevoir une provision d'encre, sans risque pour l'opérateur de se salir les doigts.

Je munis aussi chacune des roues à chiffres, intermédiaires entre la roue des unités et la dernière roue de la série, d'un nouveau genre de caractère de chute „drop-cipher“, portant le zéro, qui, lorsque la machine à numérotter est réglée pour commencer l'impression, n'est pas en position pour imprimer, et qui sera amené en position d'impression automatiquement au moment voulu. Cette disposition permet de diminuer la grandeur de la roue à caractères, tandis que, lorsqu'on emploie un blanc en plus du zéro, on augmente en conséquence la périphérie de la roue.

Dans les dessins ci-joints:

La fig. 1 est une élévation de face de ma machine perfectionnée à numérotter;

La fig. 2 en est l'élévation arrière;

La fig. 3 en est une élévation latérale, avec un pied du bâti enlevé suivant la ligne 3—3

de la fig. 1, montrant les organes dans leur position relevée;

La fig. 4 est une élévation du côté opposé à la fig. 3, avec le pied opposé du bâti enlevé suivant la ligne 4—4 de la fig. 2, montrant les organes légèrement relevés hors de la position d'impression, avec le tampon en position pour encrer;

La fig. 5 est une coupe à une plus grande échelle faite par le milieu de l'appareil et montrant la disposition des roues et des cliquets, les cliquets, pour la clarté du dessin, étant quelque peu hors de leur position;

La fig. 6 est une vue détachée des cliquets oscillants montrant la manière dont ils sont fixés sur l'arbre principal, une extrémité seulement de l'arbre étant représentée;

La fig. 7 est une vue détachée du cadre mobile pour changer la position des cliquets oscillants;

La fig. 8 est une coupe verticale prise dans le plan de la ligne 8—8, fig. 7;

La fig. 9 est une coupe verticale à travers le „suiveur“ du cadre de la roue de numérotage et à travers le collier dans lequel elle fonctionne; la figure représente le dispositif employé pour l'arrêter quand il est près de sa position inférieure;

La fig. 10 est une vue détachée du tampon encreur en partie en coupe;

La fig. 11 est un détail à plus grande échelle d'un côté du dispositif d'arrêt pour le tampon, l'autre côté étant semblable;

La fig. 12 est une vue de la roue réglant le fonctionnement de la machine pour obtenir indéfiniment la répétition du ou des mêmes caractères;

La fig. 13 est une vue de la roue pour régler le fonctionnement de la machine lorsqu'on désire „doubler“ le ou les mêmes caractères; vue prise en regardant de la droite de la fig. 5;

La fig. 14 est une vue de la roue imprimant les unités;

Les fig. 15 et 16 sont des vues des roues d'impression intermédiaires entre la roue des unités et la dernière roue d'impression de la série;

La fig. 17 est une vue de la roue des mille de la série;

Les fig. 18 et 18^a sont des vues agrandies de détails, montrant le dispositif employé pour arrêter le chiffre;

Dans ces huit dernières figures les roues ne sont pas représentées dans la position relative qu'elles occupent dans la machine. On comprendra que, dans le montage de l'appareil, le moyeu 33 est disposé de telle sorte que le crochet 68 se trouve à la partie inférieure, la tête en bas, dans une position diamétralement opposée à celles des figures;

La fig. 19 est un détail montrant une dent de cliquet dans un creux de la roue de numérotage.

1 est le bâti de la machine. Ce bâti, comme il est représenté dans les dessins, est en forme d'U, le mécanisme fonctionnant étant situé entre ses pieds; à sa partie inférieure, il est muni d'une plaque 2 ayant une ouverture sur les bords de laquelle sont découpés des guides d'impression usuels. A sa partie supérieure, le bâti se termine par un collier 3 à travers lequel va et vient le suiveur 4 de la tête de numérotage. Dans l'intérieur de ce suiveur est disposé un ressort à boudin 5, montré dans la fig. 9, qui tend à ramener la tête d'impression à sa position la plus élevée. Au-dessous de ce ressort à boudin passant à travers le collier 3 et le suiveur 4, est une goupille 6 libre de se mouvoir transversalement, mais n'ayant pas de mouvement vertical.

Le suiveur 4 est muni de fentes 7 7, qui permettent son mouvement au delà de la cheville 6. D'un côté du suiveur, la fente est agrandie à environ la dimension de la tête de la cheville 6; mais, ainsi qu'il est représenté en 8, fig. 1 et 9, cette partie agrandie n'est pas taillée dans toute l'épaisseur du suiveur, de sorte que, quand, dans le mouvement de descente du suiveur, l'agrandissement 8 est en ligne avec la cheville 6, la tête de cette cheville peut être poussée dans cet agrandissement, ce qui empêche le suiveur et les parties portées par lui d'effectuer tout mouvement ultérieur.

Le suiveur porte à son extrémité inférieure

une boîte 9 qui supporte les organes fonctionnants de la machine. Chaque pièce latérale de cette boîte est découpée, comme c'est représenté en 10, fig. 3, 4 et 5, pour recevoir l'arbre principal 11, sur lequel sont fixés les cliquets fonctionnants qui, quand la machine doit être employée pour imprimer quatre chiffres, comprennent cinq dents, 12, 13, 14, 15 et 16, préférablement formées d'une seule pièce, comme c'est représenté dans la fig. 6. Les dents de 13 à 16 sont destinées à actionner les roues de numérotage, en venant successivement en position de fonctionnement; la plus grande, 13, des quatre dernières dents mentionnées fonctionne d'abord pour actionner la roue des unités, ensuite, la dent 14 fonctionne pour actionner la roue des dizaines, et ainsi de suite dans toute la série des roues. 17 est la roue des unités, 18 la roue des dizaines, 19 la roue des centaines et 20 la roue des milliers. 21 est la roue commandant le mouvement d'impression double de la machine et 22 est la roue commandant le mouvement d'impression à répétition.

La roue des unités 17 est munie de neuf creux peu profonds 23 et d'une encoche profonde 24.

La roue des dizaines 18 est de même munie de neuf creux peu profonds 25 et d'un creux profond 26 de profondeur moindre que le creux profond 24 de la roue des unités.

La roue des centaines est aussi munie de neuf creux peu profonds 27 et d'un creux profond 28 de moindre profondeur que le creux 26 de la roue des dizaines.

La roue des milliers est formée avec dix creux peu profonds, 29.

La roue de commande 21 est munie de cinq creux peu profonds 30 et de cinq creux profonds 31, disposés alternativement, comme c'est représenté dans la fig. 13. Cette roue est creusée sur une face, en 32, fig. 5, de façon que la dent 12 puisse tourner dans le creux sans entraîner la roue; mais, quand la dent 12 est déplacée de manière à être en prise avec la périphérie interne entaillée de la roue 21, elle fera tourner cette roue une fois pour chaque oscillation de l'arbre à cliquets 11, mais elle ne permettra pas à la dent 13 ou aux autres

dents de l'arbre à cliquets de tomber dans les creux des roues à caractères en face desquels elles se trouvent, sauf quand la dent 12 est dans le creux profond, ce qui, comme on le verra clairement, a lieu à toutes les deux oscillations de l'arbre à cliquets. Grâce à cette disposition, on peut obtenir une impression double des caractères.

Quand la dent 12 de l'arbre à cliquets se déplace en position dans la roue 22, les dents qui restent de l'arbre à cliquets seront maintenues hors de prise avec les encoches situées en face d'elles dans les roues à caractères, les oscillations de l'arbre à cliquets sont ainsi rendues sans action sur les roues à caractères et ne peuvent faire mouvoir aucune de celles-ci; par suite, l'impression du même nombre s'effectue d'une manière continue.

Un moyeu 33 creusé longitudinalement, comme on le voit dans les coupes, fig. 5 et de 12 à 17 inclusivement, et rigidement supporté dans les joues 9 du châssis par les vis 34, entoure l'arbre à cliquets 11. Les cliquets peuvent osciller librement dans le creux du moyeu 33, le moyeu lui-même servant à supporter les roues à caractères et d'autres roues de fonctionnement, ainsi que l'arbre à cliquets 11.

Je vais maintenant décrire le dispositif permettant de déplacer les cliquets, de façon à les amener en position active soit relativement aux roues de numérotage, de façon qu'elles impriment la suite des nombres d'une manière consécutive, soit relativement à la roue commandant le redoublement, de façon que le même nombre soit répété deux fois, soit enfin relativement à la roue commandant la répétition, de façon que le même nombre soit répété un nombre indéfini de fois.

Derrière la plaque antérieure de la boîte 9, fig. 8, s'étend la plaque 35 du châssis mobile et les joues de la boîte sont munies de fentes pour permettre le libre mouvement de cette plaque 35. Ce châssis mobile s'étend vers l'arrière de part et d'autre le long de la boîte 9, comme c'est représenté en 36, fig. 3 et 4, et se termine de chaque côté en une pièce pendante 37, fig. 5 et 7, qui porte contre les extrémités de l'arbre à cliquets 11.

La plaque 35 est découpée à son centre, comme c'est représenté dans la fig. 7, suivant la forme d'une portion de cercle et dans l'intérieur de cette partie découpée fonctionne l'excentrique 38. Cet excentrique est fixé rigidement au levier de changement ou indicateur 39 situé sur le devant de la boîte 9. Il est facile de voir que, lorsqu'on déplace ce levier ou indicateur d'un côté à l'autre, l'excentrique 38 fonctionne de façon à faire mouvoir la plaque 35 et avec elle l'arbre 11 et les cliquets de fonctionnement, par l'intermédiaire des bras 37 portant contre chaque extrémité de l'arbre à cliquets.

Comme il y a trois changements dans la nature du travail exécuté par ma machine, il convient d'offrir des moyens pour fixer les organes en place pour chaque position d'impression.

Ceci s'obtient de la manière suivante: l'extrémité de l'aiguille 39 opposée à la pointe est percée d'une fente, comme c'est représenté dans les fig. 1, 7 et 8, et on peut mouvoir l'aiguille en arrière ou en avant sur son axe 40; ce dernier est formé par une vis passant dans l'excentrique 38 et ayant une tête à son extrémité extérieure pour empêcher le levier de tomber. Une rainure en forme d'arc de cercle 41 est formée avec trois encoches écartées de la même quantité dans la paroi antérieure de la boîte 9. Une cheville 42 qui peut être un prolongement du bouton 43 employé pour faire mouvoir l'aiguille 39, se prolonge dans cet arc 41 et elle a des dimensions telles qu'elle puisse entrer dans les encoches découpées dans le bord inférieur de cet arc. Il est facile de voir que l'aiguille 39, grâce à la fente dont est percée son extrémité, peut être soulevée hors de l'une quelconque des encoches de l'arc 41 et qu'on peut la faire tourner pour l'amener en face de l'encoche suivante dans laquelle on la fait tomber afin d'en produire le fixage dans cette nouvelle position.

Le mouvement de l'aiguille 39 effectue le changement du travail de l'appareil, de la manière suivante: cette aiguille 39, à sa partie supérieure, a la forme d'un index et elle se déplace devant un cadran 44 qui porte les in-

dications convenables, comme c'est représenté fig. 1.

Le cadran, mobile verticalement, pivote à une de ses extrémités, en 45, fig. 7; le mouvement vers le haut lui est communiqué par le mouvement vertical de l'aiguille 39, dont un épaulement porte contre sa surface inférieure, ainsi que c'est représenté dans la fig. 8. Un ressort 45^a, fig. 8, qui traverse une ouverture 45^b ménagée dans la plaque antérieure de la boîte 9 et pénètre dans une dépression 45^c établie sur le côté intérieur du cadran 44, fig. 7 et 8, tend à ramener le cadran à sa position inférieure. A son extrémité libre, ce cadran porte un crochet 46, fig. 3, qui s'engage avec l'extrémité supérieure courbe du levier pivotant 47 et agit, quand il est soulevé, pour jeter l'extrémité inférieure droite de ce levier 47 en contact avec l'extrémité saillante 47^a de la pièce portant les cliquets et fait ainsi mouvoir cette pièce porte-cliquets, de façon que tous les cliquets soient dégagés des encoches dans leurs roues respectives.

On voit, par la description précédente, que, pour changer l'appareil, il suffira de mouvoir l'aiguille 39 vers le haut jusqu'à ce que sa goupille 42 soit dégagée de l'encoche qu'elle occupe dans l'arc 41 et de déplacer l'aiguille pour l'amener en regard de l'encoche voulue de cet arc, la goupille 42 tombera alors automatiquement par suite du mouvement de descente du cadran 44 dû à l'action du ressort 45^a et la machine sera ainsi maintenue dans la position voulue de fonctionnement. Le déplacement du levier ou aiguille 39 agit, ainsi qu'il a été expliqué ci-devant, de façon à amener les cliquets dans une position différente par rapport aux encoches taillées dans les différentes roues. Les cliquets, comme c'est représenté dans la fig. 6, sont munis, à chaque extrémité de l'arbre 11, d'un ressort 47^b qui tend à les rejeter extérieurement.

Je vais maintenant décrire la disposition employée pour encre le tampon. 48 est la boîte dans laquelle est contenu le tampon 49. Cette boîte pivote en 50 dans un cadre oscillant 51. A son extrémité antérieure, cette boîte 48 est munie d'un tube 52 dans lequel on pratique

des fentes, fig. 2 et 10, pour permettre le mouvement de deux touches 53, entre lesquelles est disposé, dans ce tube, un ressort à boudin 54 qui tend à les maintenir à l'extrémité de leurs fentes respectives. Chacune de ces touches porte une cheville 55 qui, quand la touche est à l'extrémité de sa fente, fait saillie au delà du bord de la boîte 48, fig. 11, et que l'on peut rentrer complètement dans cette boîte par le mouvement des deux touches l'une vers l'autre. Le cadre oscillant 51 est percé d'un trou 56 pour recevoir les chevilles 55 qui, quand elles sont entrées dans ce trou, maintiennent le tampon et la boîte à encre; mais, par le simple mouvement des touches 53 l'une vers l'autre, on peut dégager les chevilles 55 des trous du cadre 51, ce qui permet au tampon d'être tourné sur son axe 50 jusque dans la position représentée à la fig. 4, où il est prêt à recevoir la provision d'encre. Pour faciliter le retour de la boîte à encre et du tampon à la position d'arrêt, le cadre oscillant 51 est muni d'un plan incliné 57 conduisant au trou 56 et sur lequel glissent les chevilles 55. En arrêtant le suiveur 4 à sa position la plus basse, on facilite beaucoup l'encre du tampon.

Le mouvement d'oscillation est communiqué à l'arbre à cliquets comme suit:

Des goupilles 58, fig. 5, fixées rigidement dans le cadre 9 de chaque côté de celui-ci se projettent dans des rainures 60 découpées dans les pieds du bâti 1. Cette disposition sert effectivement à guider les organes mobiles dans leur mouvement alternatif. Fixé rigidement à l'arbre 11 est un bras pendant 61 dans lequel on a pratiqué une rainure, comme c'est représenté dans les fig. 3 et 4. Une cheville 62, se projetant d'un pied du bâti, pénètre dans cette rainure; les positions relatives de ce bras rainuré et de cette cheville sont représentées à la fig. 3, où les organes sont dans leur position relevée, et à la fig. 4 dans laquelle les organes sont déprimés. Grâce à cette disposition, le mouvement alternatif qu'auront le bras 61 et par suite l'arbre 11 auquel il est rigidement fixé, est transformé en mouvement oscillant de la pièce porte-cliquets.

Le tampon est actionné, de manière à être

amené en contact avec les caractères des roues pour les encre dans leur position élevée et en être écarté quand ils descendent pour imprimer.

A cet effet, le cadre oscillant 51 porte de chaque côté sur les projections 63 des pieds du bâti de la machine. Des bras 64 relient ce cadre oscillant à la boîte 9 des roues de numérotage et lui communiquent, lors du mouvement alternatif de cette boîte, un mouvement d'oscillation.

La roue des unités porte la série des chiffres de 0 à 9 inclus et la dernière roue de la série porte les mêmes chiffres à l'exception du 0 qui est remplacé par un intervalle en blanc. Le caractère de chute „drop-cipher“ 65, s'emploie comme d'ordinaire sur les roues d'impression situées entre la roue des unités et la dernière roue de la série.

Quand la machine est d'abord réglée pour imprimer consécutivement, les caractères de chute devront être dans la position représentée dans les fig. 16 et 18, mais à mesure que les roues portant les caractères sont amenées en position de fonctionnement, le caractère de chute sera repoussé et la roue sera dans la position représentée dans la fig. 15 qui est la position d'impression.

Le caractère de chute 65 a la forme d'un L, en coupe transversale verticale, comme c'est représenté dans la fig. 18; son pied supérieur porte le caractère zéro et dans son pied inférieur est réservé un creux 66 dans lequel pénètre une cheville 67^a faisant saillie sur la face de la roue de numérotage. Cette disposition permet au caractère de chute d'être repoussé en dehors à la position d'impression, mais l'empêche de sortir tout à fait de la roue à caractères.

Au-dessus du creux 66 est une rainure 67 dans laquelle vient s'adapter une pièce en forme de crochet 68 qui se projette du moyeu 33. Ce crochet agit comme came et quand, par suite du mouvement de rotation de la roue à caractères, le bord arrondi du caractère de chute rencontre le bord incliné de ce crochet 68, le caractère de chute est repoussé extérieurement en position pour imprimer.

Pour régler la machine, on fait tourner les roues à caractères, de façon que le caractère de chute soit repoussé en position d'impression; ensuite on fait tourner la roue à caractères de façon à porter le caractère de chute au delà de sa position d'impression et hors de contact du crochet 68, après quoi on ramène la roue à caractères dans la position précédente; le crochet 68 pénètre dans le creux 67, comme c'est représenté dans la fig. 18 et maintient le caractère de chute dans la position de non-impression.

Lorsqu'on imprime avec la machine et qu'on commence par les chiffres 1, 2, 3, etc., la dernière roue de la série occupe une position telle que c'est son espace en blanc qui se trouve dans la position occupée, lorsque cette roue imprime, par le caractère voulu; les caractères de chute des roues intermédiaires occupent la même position relative que le blanc de la dernière roue de la série et sont en position de non-impression.

La roue des unités 17 imprime donc seule de 1 à 9; au dixième mouvement de cette roue, c'est-à-dire après un tour complet, la dent de cliquet 13 pénètre dans son creux profond 24 et la dent suivante 14 des cliquets pénètre dans un creux 25 de la roue des dizaines 18 dont le chiffre 1 se trouve ainsi amené en position d'impression, en même temps que le zéro de la roue des unités, pour imprimer le nombre 10 et ainsi de suite; au dixième tour de la roue des unités 17, c'est-à-dire lorsque le nombre 99 a été imprimé, la roue des dizaines 18 est entraînée par le cliquet 14 qui lui fait effectuer sa dixième fraction de révolution; mais lorsque la roue 18 a effectué son premier dixième de tour, pour imprimer le chiffre 1 des dizaines, le crochet 68 restant fixe, la rainure 67 l'a abandonné et le caractère de chute 65 s'est trouvé libéré, de telle sorte que, lors de la dixième fraction de révolution de la roue 18, ce caractère s'est trouvé saisi sur sa partie arrondie par le crochet 68 et a été amené en position pour imprimer le zéro qu'il porte en même temps que la roue 17 imprime un „zéro“ et la roue 19 le chiffre 1.

Le nombre 100 se trouve imprimé et ainsi

de suite pour les autres roues jusqu'à la dernière de la série, le même fonctionnement se répétant de proche en proche.

REVENDEICATION :

Une machine à numérotter à la main, permettant l'impression automatique, soit simple, soit redoublée, de nombres consécutifs, ainsi que l'impression répétée continue d'un même nombre, ladite machine étant essentiellement caractérisée par :

- a. Des roues à caractères 17, 18, 19, 20 dentées intérieurement, montées folles sur un moyeu commun 33 et actionnées, par un système de cliquets 13, 14, 15, 16, logé dans une rainure dudit moyeu ;
- b. Deux roues de commande 21, 22, montées folles sur ledit moyeu 33, dont l'une 22 a une surface interne unie, tandis que l'autre, 21, présente une dentelure intérieure, formée par des creux alternativement profonds et peu profonds, et qui sont toutes deux disposées pour entrer en relations avec le système à cliquets, le-

quel est lui-même commandé par l'intermédiaire d'une came 35, d'un excentrique 38, au moyen d'un index mobile 39, dans le but de produire, à la volonté, une impression, soit consécutive, soit redoublée, soit répétée ;

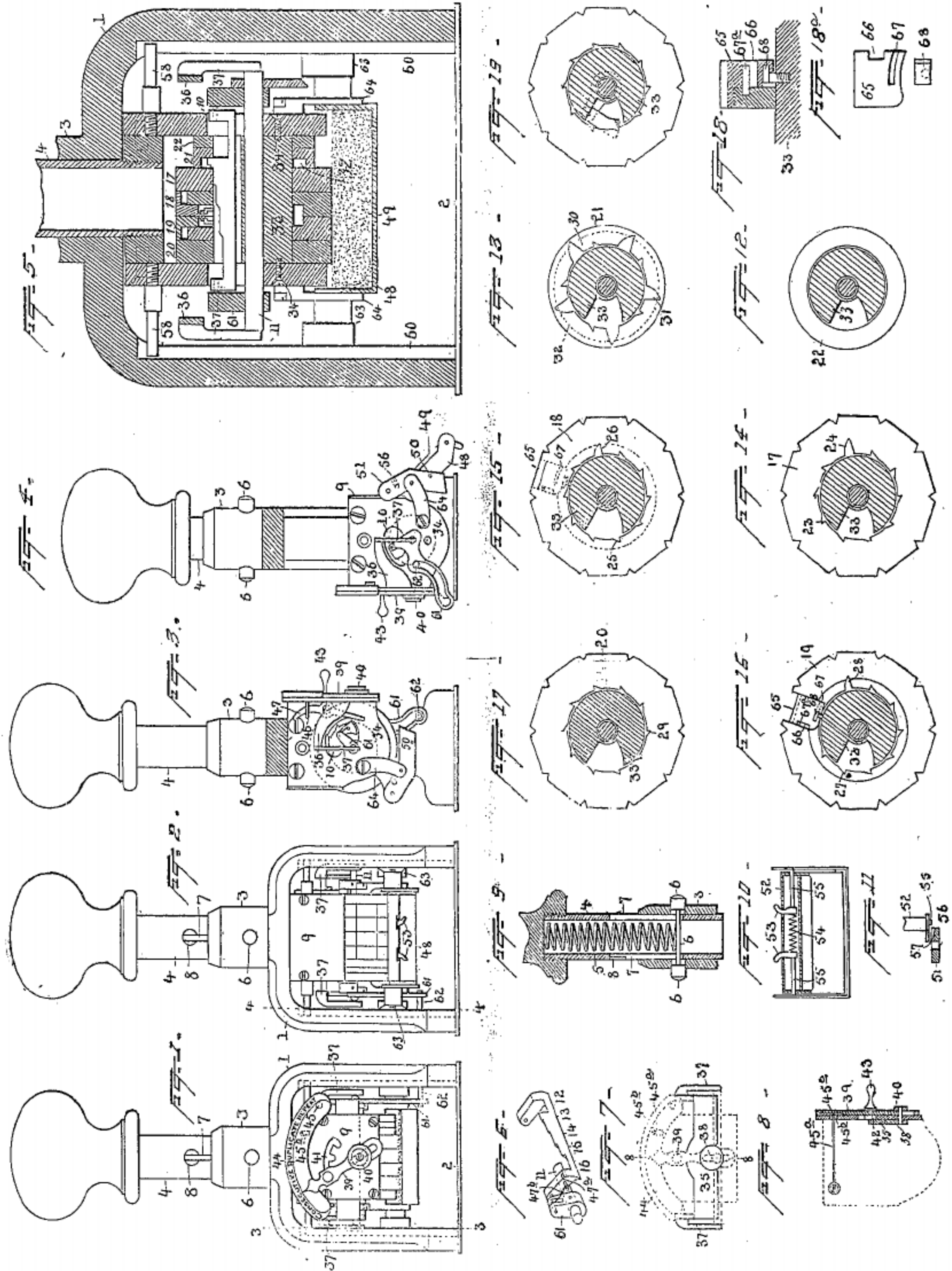
- c. Un tampon encreur 49 disposé dans un cadre oscillant 51 de façon à pouvoir basculer sur ses pivots 50 par suite du dégagement des chevilles à ressort 55 obtenu à l'aide des touches 53, et être rabattu vers l'extérieur pour être alimenté d'encre ;
- d. La disposition, sur chacune des roues à caractères comprises entre la première et la dernière roue de la série, d'un nouveau genre de caractère de chute 65, portant le zéro, qui, lorsque la machine est réglée pour commencer l'impression, n'est pas en position pour imprimer, mais est amené automatiquement en position d'impression au moment voulu.

EDWIN-GRANVILLE BATES.

Mandataires : E. BLUM & Cie.

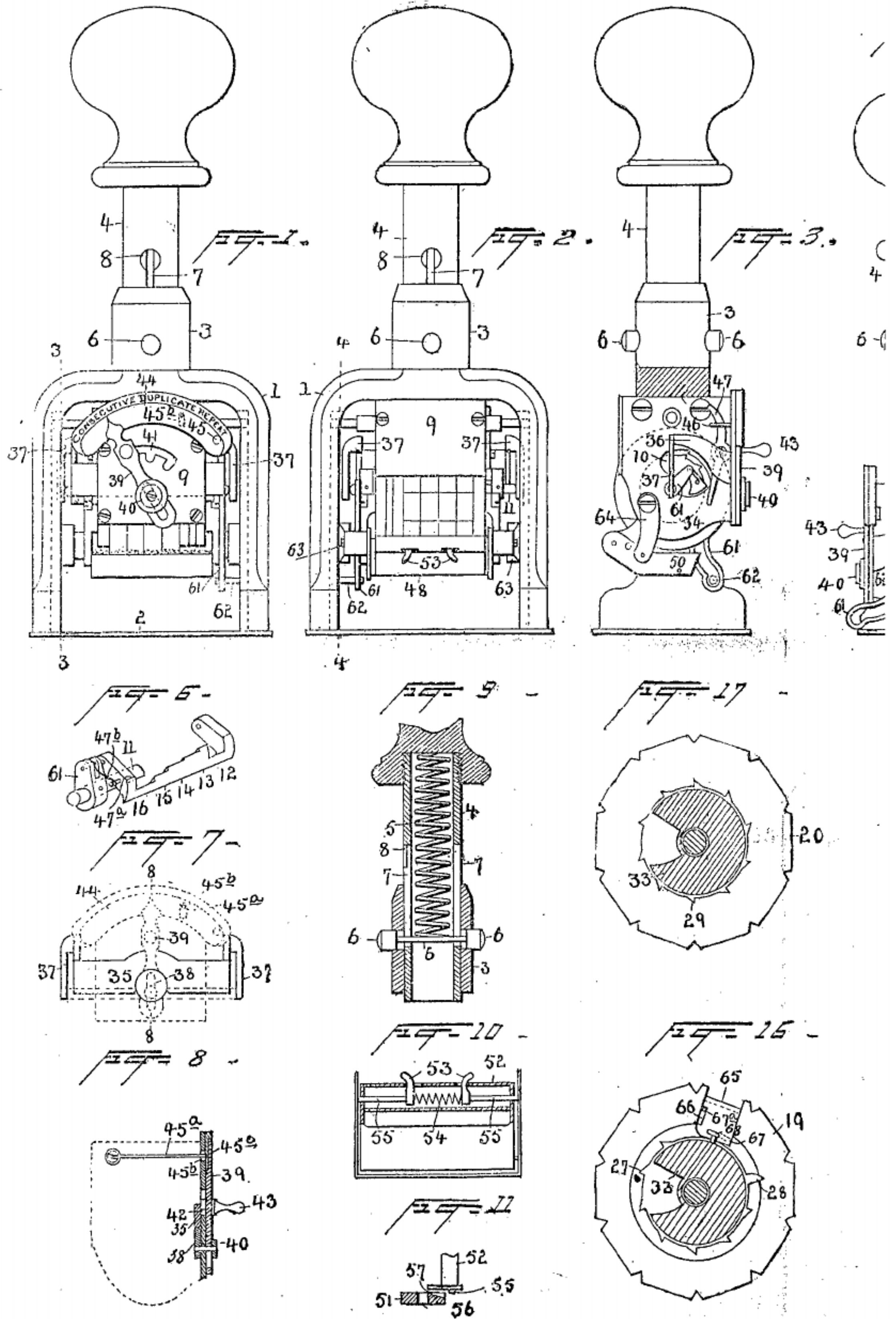
Edwin-Granville Bates.
28 juillet 1891.

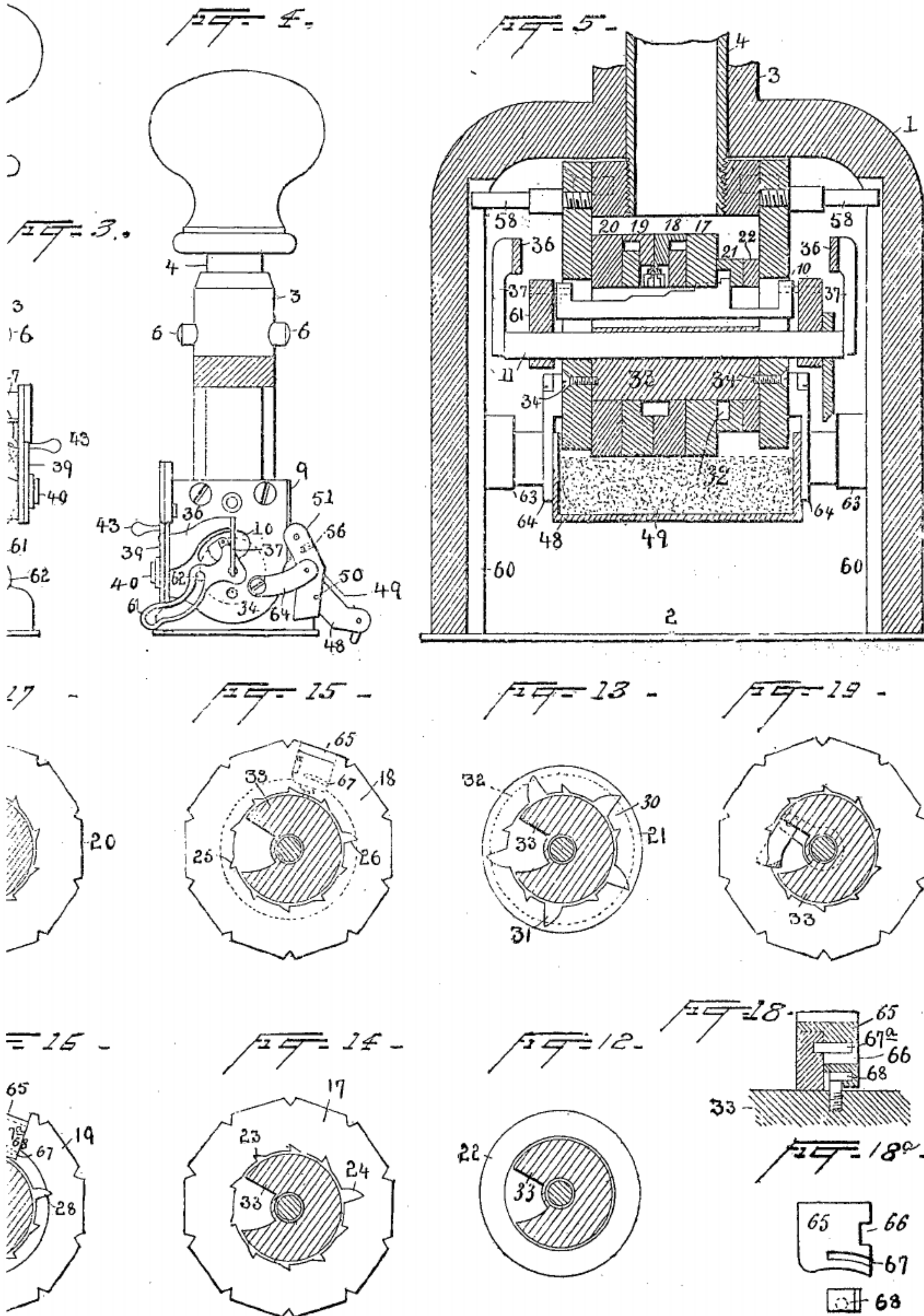
Brevet N° 4122.
1 feuille.



Edwin-Granville Bates.
Mandataires: E. BLUM & Cie.

28 juillet 1891.





Edwin-Granville Bates.
Mandataires: E. BLUM & Cie.

NEXT ITEM

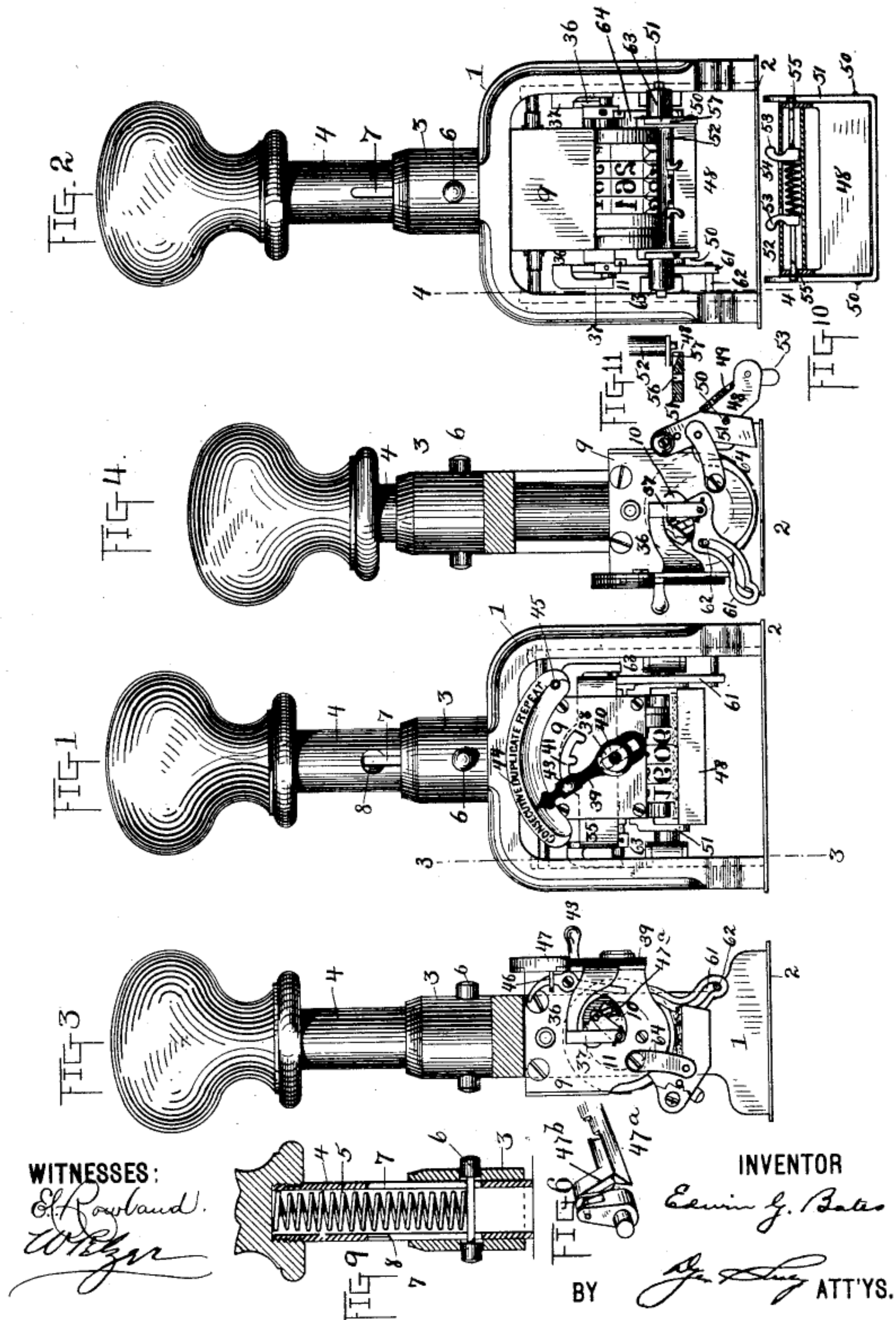
(No Model.)

2 Sheets—Sheet 1.

E. G. BATES.
NUMBERING MACHINE.

No. 456,874.

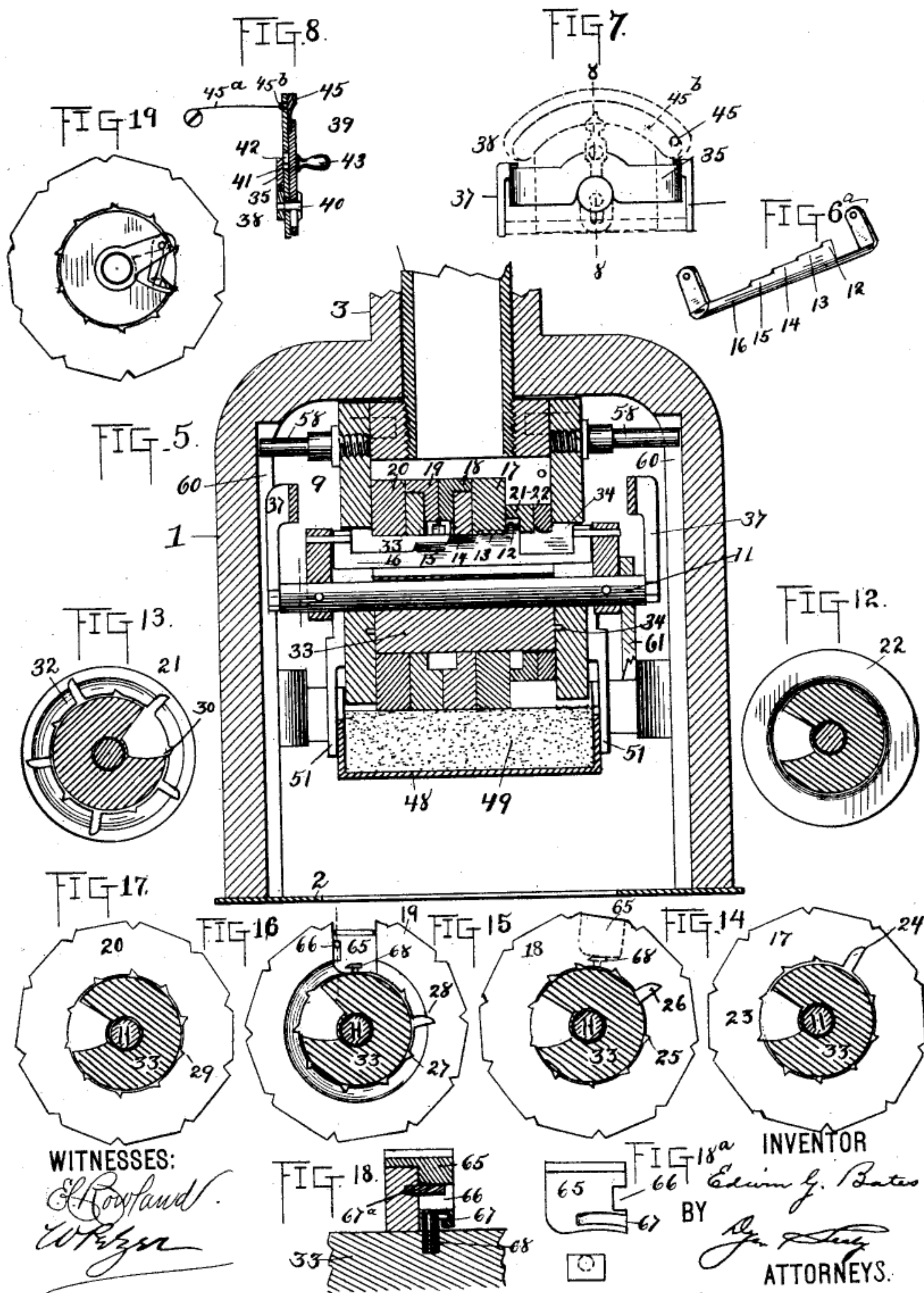
Patented July 28, 1891.



E. G. BATES.
NUMBERING MACHINE.

No. 456,874.

Patented July 28, 1891.



UNITED STATES PATENT OFFICE.

EDWIN G. BATES, OF NEW YORK, N. Y.

NUMBERING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 456,874, dated July 28, 1891.

Application filed March 4, 1890. Serial No. 342,564. (No model.)

To all whom it may concern:

Be it known that I, EDWIN G. BATES, a citizen of the United States, residing at New York city, in the county and State of New York, have invented a certain new and useful Improvement in Numbering - Machines, of which the following is a specification.

The object of my invention is a numbering-machine which shall be readily adjustable to print the same number an indefinite number of times, repeat any given number twice, and then automatically change to the next higher number, or print numbers consecutively, all the changes of which machine shall be controlled by a single adjustable lever, which may serve as a pointer, and to that end is preferably arranged in front of a scale indicating the nature of the work required from the machine, which machine shall have an ink-pad capable of being brought into position for inking without liability of soiling the fingers, the whole machine occupying a comparatively small space and being economical of manufacture and efficient in the character of the work produced.

In carrying out my invention I preferably employ for the operation of the required number of type-wheels to effect printing consecutively an arrangement of oscillating pawls for rotating the type-wheels located within an annular space in the type-wheels, said wheels being provided with the usual number of deep and shallow notches, by which arrangement economy of space, of cost of manufacture, and efficiency of work is attained.

In addition to the printing type-wheels I employ two governing-wheels—one for governing the adjustments of the machine in printing the same number twice, or “duplicating,” as it is termed, and the other for governing the adjustment of the machine in printing the same number continuously, or “repeating,” as it is termed. Both governing-wheels are located in line with the type-wheels, the first one being provided with ten notches, alternately deep and shallow, so that it shall be moved but once for every two oscillations of its pawl, and the other having no notches whatever, being simply an idler-wheel. The pawls which I prefer to employ

are carried on the main shaft and may be formed as teeth from the same piece. This pawl-shaft is hung so as to be capable of being shifted bodily, so that for the purpose of duplicating the tooth for the wheel governing the duplicating movement may be brought into operative position, and so that it may also be brought into position with respect to the wheel governing the repeating-printing, in which position all the other teeth are held out of operative position. The pawl-shaft is preferably supported by the hub which supports the type-wheels, and passes entirely through such hub and being loose to allow it to be shifted. This shifting movement is effected, preferably, by a changing indicator, lever, or other device operating in front of a suitably-marked scale, the movable frame being held in any of its determined positions by locking the changing lever or indicator, means being provided positively operating to effect the locking at the desired point. Further, I provide a lock for the reciprocating type-wheel case or frame, whereby the same is held in a given position while ink is being applied to the ink-pad, the ink-pad being also provided with a lock, which, when the type-wheel case is in the locked position, may be manipulated to turn the pad into the inking position without soiling the fingers. I also provide each of the numbering-wheels intermediate the units-wheel and the last wheel of the series with a novel form of drop-cipher, which, when the numbering-machine is set to begin printing, is out of printing position, and which will be brought into printing position automatically at the proper time. This arrangement results in a reduction of the size of the type-wheels, as where a blank is used in addition to the cipher the perimeters of the wheels thereby are increased.

In the accompanying drawings, forming a part of this specification, Figure 1 is a front elevation of my improved numbering-machine. Fig. 2 is a rear elevation thereof. Fig. 3 is a side elevation taken with one leg of the main frame removed on the line 3 3 of Fig. 1, showing the parts in their raised position. Fig. 4 is an elevation of the opposite side to Fig. 3, with the opposite leg of the main frame removed, on the line 4 4 of Fig.

2, showing the parts slightly raised out of the printing position, with the ink-pad in position for inking. Fig. 5 is an enlarged central section showing the arrangement of wheels and
 5 pawls, the pawls, for clearness of illustration, being shown somewhat out of position. Figs. 6 and 6^a are detached views of the oscillating pawls, showing in Fig. 6 the manner of hanging the same to the main shaft. Fig. 7 is a
 10 detached view of the movable frame in which the pawls are hung. Fig. 8 is a vertical section taken on the plane of the line 8 8, Fig. 7. Fig. 9 is a vertical section through the follower of the numbering-wheel case and the
 15 collar through which it operates, showing the method of locking the same when near its lowest position. Fig. 10 is a detached view of the ink-pad, partly in section. Fig. 11 is an enlarged detail of one side of the
 20 locking device for the ink-pad, the other side being similar. Fig. 12 is a view of the wheel governing the operation of the machine for repeating the same character or characters indefinitely. Fig. 13 is a view of the wheel
 25 for governing the operation of the machine in duplicating the same character or characters taken, looking toward it from the left of Fig. 5. Fig. 14 is a view of the units-numbering wheel. Figs. 15 and 16 are views of
 30 the numbering-wheels intermediate the units-wheel and the last printing-wheel of the series. Fig. 17 is a view of the last wheel of the series. Figs. 18 and 18^a are enlarged details showing the manner of locking the
 35 cipher, and Fig. 19 is a detail showing a pawl-tooth in a notch of a numbering-wheel.

In the drawings, 1 is the standard or main frame of the machine. This frame, as shown in the drawings, is of a U shape, the operating mechanism being located between its legs.
 40 At its bottom it is provided with a plate 2, having an opening, at the edges of which the usual printing-guides are cut. At its top this frame terminates in a collar 3, through
 45 which reciprocates the follower 4 of the numbering-head. Within this follower is arranged a spiral spring 5, (shown in Fig. 9,) the tendency of which is to return the numbering-head to its highest position. Below
 50 this spiral spring, passing through the collar 3 and follower 4, is a pin 6, free to move transversely, but having no vertical movement. The follower 4 is slotted at 7 7 to permit of its movement past the pin 6. The slot at
 55 one side of the follower is enlarged to about the size of the head of the pin 6; but this enlarged portion is not cut all the way through the material of the follower, as shown at 8, Figs. 1 and 9, so that when the enlargement
 60 8 is in the downward movement of the follower is in alignment with pin 6 the head of said pin may be pushed into said enlargement, thereby locking the follower and the parts carried by it from further movement. The
 65 follower carries at its lower end a case 9, which sustains the operative parts of the machine. Each side piece of this case is cut

away, as shown at 10, Figs. 3 and 4, to receive the main shaft 11, upon which is hung the operating-pawls, which, when the machine is
 70 to be used for printing four figures, comprise five teeth 12, 13, 14, 15, and 16, preferably formed from a single piece, as shown in Fig. 6^a. The teeth from 13 to 16 are designed to operate the numbering-wheels, they
 75 coming into operation successively, as is well understood, the largest tooth 13 of the four last mentioned first operating to move the units-wheel, the tooth 14 next to move the tens-wheel, and so on throughout the series
 80 of wheels.

17 is the units-wheel; 18, the tens-wheel; 19, the hundreds-wheel, and 20 the thousands-wheel.

21 is the wheel governing the duplicating-
 85 printing movement of the machine, and 22 is the wheel governing the repeating-printing movement of the machine.

The units-wheel is provided with nine shallow notches 23 and one deep notch 24. The
 90 tens-wheel is likewise provided with nine shallow notches 25 and one deep notch 26 of less depth than the deep notch 24 of the units-wheel. The hundreds-wheel is also provided with nine
 95 shallow notches 27 and one deep notch 28 of less depth than the notch 26 of the tens-wheel. The thousands-wheel is provided with ten shallow notches 29. The governing-wheel 21 is provided with five shallow notches 30 and
 100 five deep notches 31, alternately arranged, as shown in Fig. 13, where it will be seen that the governing-wheel 21 is recessed on one face at 32, so that the tooth 12 may rotate in the recess without carrying the wheel with it; but
 105 when the tooth 12 is shifted into engagement with the inner notched periphery of the wheel 21, then it will rotate said wheel once for each oscillation of the pawl-shaft 11, but will not permit the tooth 13 or other teeth of said
 110 pawl-shaft to drop into the notches on the type-wheels opposite them, except when the tooth 12 is in the deep notch, which, as will be plainly seen, is at each second oscillation of the pawl-shaft. By this arrangement the duplicating of characters is permitted. When
 115 the tooth 12 of the pawl-shaft is shifted into position within the wheel 22, then the remaining teeth of the pawl-shaft will be held out of engagement from the notches opposite them in the type-wheels, whereby the oscillations of the pawl-shaft are rendered ineffective
 120 to move any of the type-wheels, and, as a result, the printing of the same number continuously is effected.

Surrounding the pawl-shaft 11 is a hub 33,
 125 recessed longitudinally, as shown in the sections, Figs. 14 to 17, inclusive, and rigidly supported in the side pieces of the frame 9 by the pins 34. The pawls are free to oscillate freely within this recess of this hub, the hub itself
 130 serving to support the type and other operating-wheels, as well as the pawl-shaft 11.

The manner of shifting the pawls so as to bring them into operative position either with

relation to the numbering-wheels, so that they will print consecutively, or with relation to the duplicating governing-wheel, so that the same number will be duplicated twice, or with relation to the repeating governing-wheel, so that the same number may be repeated an indefinite number of times, is as follows: Behind the front plate of the casing 9 extends the plate 35 of the movable frame, the side plates of the casing being slotted to permit of the free movement of said plate 35. This movable frame extends rearwardly at each side along the side of the casing 9, as shown at 36, Figs. 3 and 4, and terminates at each side in a depending piece 37, and bearing against the ends of the pawl-shaft 11. The plate 35 at its center is cut out, as shown at Fig. 7, in the form of a portion of a circle, and within this cut-out portion the eccentric 38 works. This eccentric is rigidly secured to the change lever or indicator 39, located in front of the casing 9. It will be seen that when this lever or indicator 39 is moved from one side to the other the eccentric 38 will operate to move the plate 35, and with it the shaft 11 and operating-pawls, by reason of the arms 37 bearing against each end of the pawl-shaft.

As there are three changes in the character of the work done by my machine, it is desirable to provide means for locking the machine in each printing position. This is done in the manner following: The tail end of the lever 39 is slotted, as shown in Figs. 1 and 8, and may be moved backward and forward on its fulcrum 40, which is a screw passing through a slot in the front plate of the casing 9 and set into the eccentric 38 and having a head on its outer end to prevent the lever falling off. An arc of a circle 41, Figs. 1 and 8, is cut in the front plate of the casing 9, with the pivot 40 as a center. This arc 41 is provided with three notches at equal distances apart. A pin 42, which may be an extension of the handle 43, employed to move the lever 39, extends into this arc 41, and is of such size that it will enter the notches cut on the lower side of said arc. Now it will be seen that the lever 39, by reason of the slot in its tail, may be moved upward from its fulcrum and out of any notch in the arc 41 and be swung around over to the next notch, into which it is caused to drop and thereby be locked.

The movement of the lever 39 effects the changing of the work of the machine in the following manner: Said lever 39 is at its upper end in the form of a pointer and works in front of a scale 44, which bears upon it the proper marking, as shown in Fig. 1. This scale is free to move upward, being pivoted at one end at 45, the upward movement being given to it by the upward movement of lever 39, a shoulder of which bears against its under surface, as shown in Fig. 8. A spring 45^a, Fig. 8, bears against a lip 45^b on the rear face of the scale, as indicated in Fig. 7, tending to return the scale to its lowest position. At

its front or free end this scale carries a hook 46, which engages with the curved end of the pivoted lever 47 and acts, when raised, to throw the lower straight end of said lever 47 into contact with the projecting end 47^a of the pawl-carrying piece, and thus moves said pawl-carrying piece, so that all the pawls are disengaged from the notches of their respective wheels.

It will be seen from the foregoing description that to change the machine it will be necessary only to move the lever 39 upward until its pin 42 is free from a notch in the arc 41 and to shift the lever over to the desired notch in the arc, when the pin of the lever will automatically drop therein by the downward movement of the scale actuated by its spring, and the machine will then be locked in the desired operating position. The shifting of the lever, as before explained, through its connection with the shifting frame acts to bring the pawls into a different position with relation to the notches of the various wheels. The pawls, as shown in Fig. 6, are provided with a spring 47^b, which tends to throw them outward.

The arrangement for inking the ink-pad will now be described. 48 is the box in which the ink-pad 49 is contained. This box is pivoted at 50 in a swinging frame 51. At its front end this box 48 is provided with a tube 52, which is slotted, as shown in Figs. 2 and 10, to permit of the movement of two thumb-pieces 53, between which is arranged in said tube a spiral spring 54, which tends to keep them at the ends of their respective slots. Each of these thumb-pieces carries a pin 55, which, when the thumb-pieces are at the ends of their slots, project beyond the side of the box 48, as shown in Fig. 11, and which may be drawn wholly within said box by the movement of the thumb-pieces toward each other. The swinging frame 51 is provided with a recess 56 to receive the pins 55, which, when entered therein, lock the ink box and pad, but which may be withdrawn therefrom by simply moving the thumb-pieces 53 toward each other, so as to withdraw the pins 55 within the said frame of said ink-box, thereby permitting the ink-box to be turned on its pivot 50 to the position shown in Fig. 4, ready to receive the supply of ink. The swinging frame 51 is provided with an incline 57, leading to this recess 56, whereby the return of the ink box and pad to the locked position is facilitated. By locking the follower 4 in its lowermost position the operation of inking the pad will be greatly facilitated.

The oscillating movement is given to the pawl-shaft as follows: Carried by the frame 9 at each side thereof are pins 58, which are rigidly attached to said frame and project into grooves 60, cut in the legs of the main frame 1. This arrangement serves effectually to guide the working parts in their reciprocating movement. Rigidly secured to the shaft 11 is a depending arm 61, which is slot-

ted, as shown in Figs. 3 and 4. A pin 62, projecting from a leg of the main frame, enters the slot in the depending arm 61, the relationship of said slotted arm and said pin when in the raised position being shown in Fig. 3 and when in the depressed position in Fig. 4. By this arrangement the reciprocating movement which the arm 61, and consequently the said shaft to which it is rigidly attached, will have is converted into a rocking movement.

The ink-pad is operated so as to bring it in contact with the type in the raised position to ink the same and to swing it away from the type when they are descending to print, as follows: The swinging frame 51 is pivoted or hinged at each side in the projections 63 from the legs of the main frame of the machine. Links 64 connect this swinging frame with the casing 9 of the numbering-wheels to effect the swinging thereof by the reciprocating motion of said casing. The drop-cipher, as is usual, is used on the printing-wheels intermediate the units-wheel and the last wheel of the series. When the machine is first set to begin printing consecutively, the drop-ciphers should be in the position shown in Fig. 16; but as the wheels bearing the drop-ciphers are brought into operation the drop-cipher will be forced out and will be in the position shown in Fig. 15, which is the printing position. 65 is the drop-cipher, which is L-shaped in vertical cross-section, as shown in Fig. 18, its upper leg being provided with a type and its lower leg having a slot 66, into which projects a pin 67^a, projecting from the face of the numbering-wheel. This arrangement permits the drop-cipher to be forced outward to the printing position, but prevents it from dropping altogether out of the type-wheel. Below the slot 66 is a recess 67, into which a hook-shaped piece 68, projecting from stationary hub 33, is adapted to engage. This hook acts as a wiper, and when the rounded edge of the drop-cipher meets the inclined edge of said hook the drop-cipher is forced outward into the printing position. In setting the machine the type-wheel is turned so that the drop-cipher will be forced into the printing position. Then the type-wheel is turned so as to carry the drop-cipher beyond its printing position and out of contact with the hook 68. Then the type-wheel is turned backward and the side flange 68^a of the hook 68 enters the recess 67, as shown in Fig. 18, and locks the drop-cipher in that position.

What I claim is—

1. The combination, in a numbering-machine, of a series of printing-wheels, a series of operating-pawls, a governor, an indicator, and mechanism, substantially as described, intermediate said indicator, and operating-pawls, whereby by the movement of the indicator the pawls are brought into operative relationship with the governor, substantially as set forth.

2. The combination, in a numbering-machine,

of a series of printing-wheels, a series of operating-pawls, a movable piece in which said pawls are hung, a governor, an indicator, and mechanism, substantially as described, intermediate said indicator, and operating-pawls, whereby by the movement of the indicator the pawls are withdrawn from engagement with the printing-wheels and are brought into operative relationship with the governor, substantially as set forth.

3. In a numbering-machine, the combination, with the printing-wheels and operating-pawls, of a pivoted scale, an indicator operative to move said scale on its pivot, mechanism, substantially as described, connected with said scale, operated by its outward movement and adapted to withdraw the pawls from the notches of the printing-wheels, and mechanism, substantially as described, connected with said indicator, operative to move said pawls into a changed operating position, substantially as set forth.

4. The combination, in a numbering-machine, of a series of printing-wheels, a series of operative pawls, a pivoted lever, one end of which is adapted to move said pawls, an indicator, mechanism, substantially as described, between said indicator and said pivoted lever, whereby by the movement of the indicator the pivoted lever is operated to disengage the pawls from the notches of the printing-wheels, substantially as set forth.

5. The combination, in a numbering-machine, of a series of printing-wheels, a series of pawls, an indicator, an eccentric operated by said indicator, and a movable piece connected with the pawls, moved by said eccentric, substantially as set forth.

6. In a numbering-machine, the combination, with the printing-wheels and operative pawls, of a pivoted scale, mechanism, substantially as described, between said scale and said pawls, whereby by the outward movement of said scale the said pawls are withdrawn from the notches of the printing-wheels, substantially as set forth.

7. In a numbering-machine, the combination of a pivoted scale, an indicator operative to move said scale on its pivot, a pin on said indicator, and a slot and notches to receive said pin, substantially as set forth.

8. In a numbering-machine, the combination, with a series of annular printing-wheels notched on their inner peripheries, of a series of oscillating pawls within said annular printing-wheels, means, substantially as described, for shifting said pawls longitudinally, and a non-printing-governing wheel receiving one of said pawls when in the shifted position, whereby the character of the printing is changed, substantially as set forth.

9. In a numbering-machine, the combination, with a series of annular printing-wheels notched on their inner peripheries, of a series of oscillating pawls within said annular printing-wheels, a blank annular disk provided with alternate deep and shallow

notches, a pawl connected with the printing-wheel pawls adapted to engage with the notches in said blank disk, and means, substantially as described, for shifting both the printing-wheel pawls and the pawl for the blank disk together, whereby the latter may be brought into engagement with said blank disk, substantially as set forth.

10. In a numbering-machine, the combination, with a series of annular numbering-wheels notched on their inner peripheries, of a series of oscillating pawls within said annular numbering-wheels, a blank annular disk having a recess 32 and alternate deep and shallow notches cut on its inner periphery, a pawl connected with the printing-wheel pawls adapted to oscillate freely in said recess 32 and to be brought into engagement with said deep and shallow notches, and means, substantially as described, for shifting both the printing-wheel pawls and the pawl for the blank disk together, whereby the latter may be brought into engagement with the notches on said blank wheel, substantially as set forth.

11. The combination, in a numbering-machine, of a series of annular numbering-wheels, a blank annular wheel having alternate deep and shallow notches, a blank annular wheel without notches, a series of oscillating pawls within said annular wheels operative to effect the consecutive numbering operation of the type-wheels, an additional pawl connected with the printing-wheel pawls adapted to engage with the notches in

the blank toothed wheel and to oscillate freely in the annular space of the blank unnotched wheel, and means, substantially as described, for shifting both the printing-pawl and the pawl for the blank disk together, whereby the latter may be brought into position with reference to said blank wheels, substantially as set forth.

12. The combination, in a numbering-machine, of a pivoted ink-pad box and a spring-pressed pin for locking said box in the operative position, substantially as set forth.

13. The combination, in a numbering-machine, of a frame, mechanism, substantially as described, for moving said frame, and an ink-pad box pivoted in the said frame, substantially as set forth.

14. In a numbering-machine, the combination, with a stationary hub, of a wiper mounted thereon, a type-wheel provided with a loose section adapted to be moved outward by contact with said wiper, a recess in the bottom of said section adapted to engage with a side flange 68^a on said wiper, whereby the section is held in its lowest position, and a pin and slot operative to prevent said section falling out, substantially as set forth.

This specification signed and witnessed this 21st day of February, 1890.

EDWIN G. BATES.

Witnesses:

D. H. DRISCOLL,
W. R. ZER.

NEXT ITEM

Received for record *Aug 10-1892* and recorded in
Liber *L. 46*; page *316*, of Transfers of Patents.

IN TESTIMONY WHEREOF I have caused the seal of
the Patent Office to be hereunto affixed.

Edw. G. Bates

W. E. Simonds

Commissioner of Patents.

WHEREAS, I, EDWIN G. BATES, of New York City, in the County and State of New York, have made certain inventions, which are described in the following patent and applications for patents of the United States, to wit:--

Patents

486964

✓ Letters Patent No. 456,874, granted July 28, 1891, for Improvement in Numbering Machines,

484389

✓ Application Serial No. 312,949, filed June 3, 1889, and allowed May 10, 1892, for Improvement in Machines for Printing Stencil Characters Successively,

484390

Application Serial No. 349,452, filed April 25, 1890, and allowed April 5, 1892, for Improvement in Consecutive Numbering Machines,

488052

Application Serial No. 365,086, filed September 15, 1890, and allowed March 26, 1892, for Improvement in Machines for Consecutively Numbering Checks, Bonds &c. in Sheets,

489449

Application Serial No. 365,087, filed September 15, 1890, and allowed June 2, 1892, for Improvement in Check Punches,

484391

Application Serial No. 407,515, filed October 2, 1891, and allowed June 18, 1892, for Improvement in Numbering Machines,

Application Serial No. 428,780, filed April 12, 1892, and allowed May 16, 1892, for Improvement in Consecutive Numbering Machines; and

WHEREAS, I am now the sole owner of said patents and applications, and of all rights under the same; and

WHEREAS, the BATES MANUFACTURING COMPANY, a corporation organized and existing under the laws of the State of ~~New Jersey~~

New York
(first changed
by 2413)

349.432--Ent. (Inv. O.K.)
365.086--Ent. (Inv. " ")
365.087--Ent. (Inv. " ")
407.513--Ent. (Numbering Machine)
428.780--Ent. (Consecutive " ")

-2-

is desirous of acquiring the entire right, title and interest in and to said Letters Patent, and in and to any Letters Patent which may be issued on said applications:

NOW THEREFORE, To all whom it may concern, Be it known, that, for and in consideration of the sum of One Dollar, to me in hand paid, the receipt of which is hereby acknowledged, I, the said Edwin G. Bates, have sold, assigned and transferred, and by these presents do sell, assign and transfer, unto the said Bates Manufacturing Company, its successors and assigns, the whole right, title and interest in and to said Letters Patent, and in and to the inventions described in said applications for Letters Patent, and in and to any Letters Patent which may be issued upon said applications; the same to be held and enjoyed by the said Bates Manufacturing Company, for its own use and behoof, and for the use and behoof of its successors and assigns, to the full end of the terms for which said Letters Patent are or may be granted, as fully and entirely as the same would have been held and enjoyed by me had this assignment and sale not been made. And I do hereby authorize and request the Commissioner of Patents to issue the patents upon said applications to the said Bates Manufacturing Company and its successors and assigns, as the assignee of my entire right, title and interest in and to the same.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my seal, this 30th day of July, 1892.

In presence of:

S. D. Green

Edwin G. Bates

NEXT ITEM

**15. B. 13 841. Numerirwerk für Druckerpressen. —
EDWIN GRANVILLE BATES, 44 Broad Street in
New-York, City, V. St. A.; Vertreter: A. DU BOIS-
REYMOND in Berlin N.W., Schiffbauerdamm 29a.
18. October 1892.**

NEXT ITEM

E. G. BATES.
CONSECUTIVE NUMBERING MACHINE.

No. 484,389.

Patented Oct. 18, 1892.

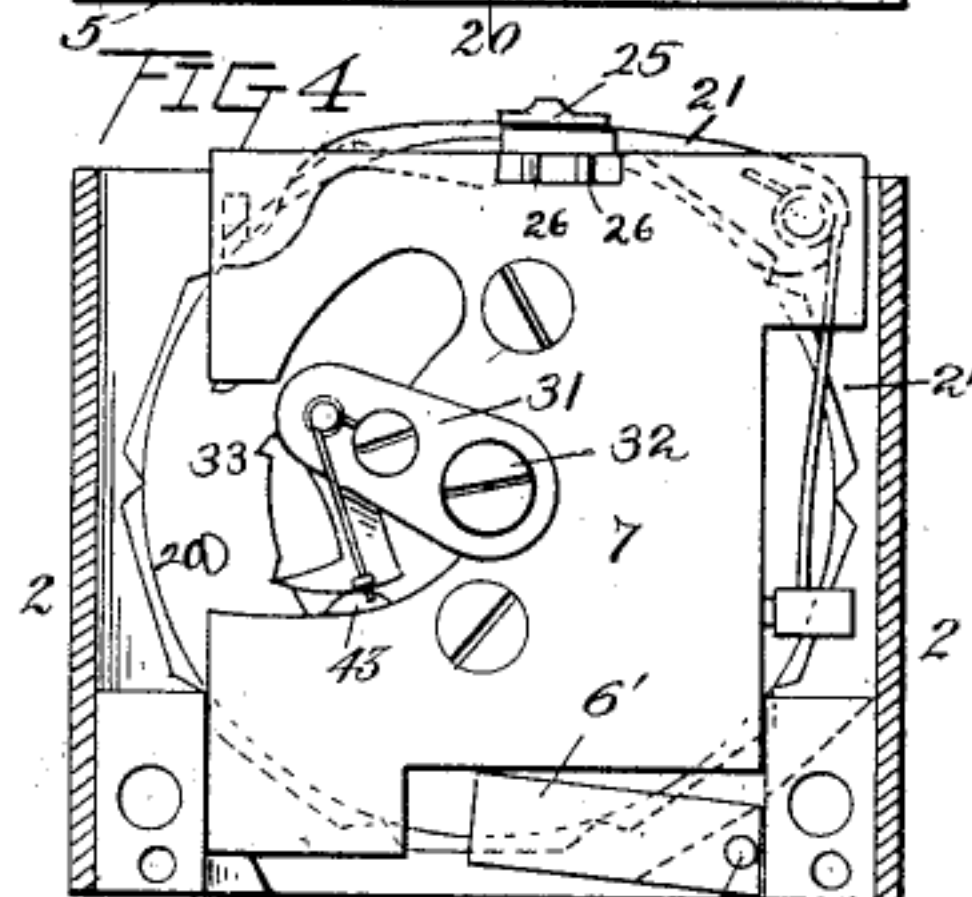
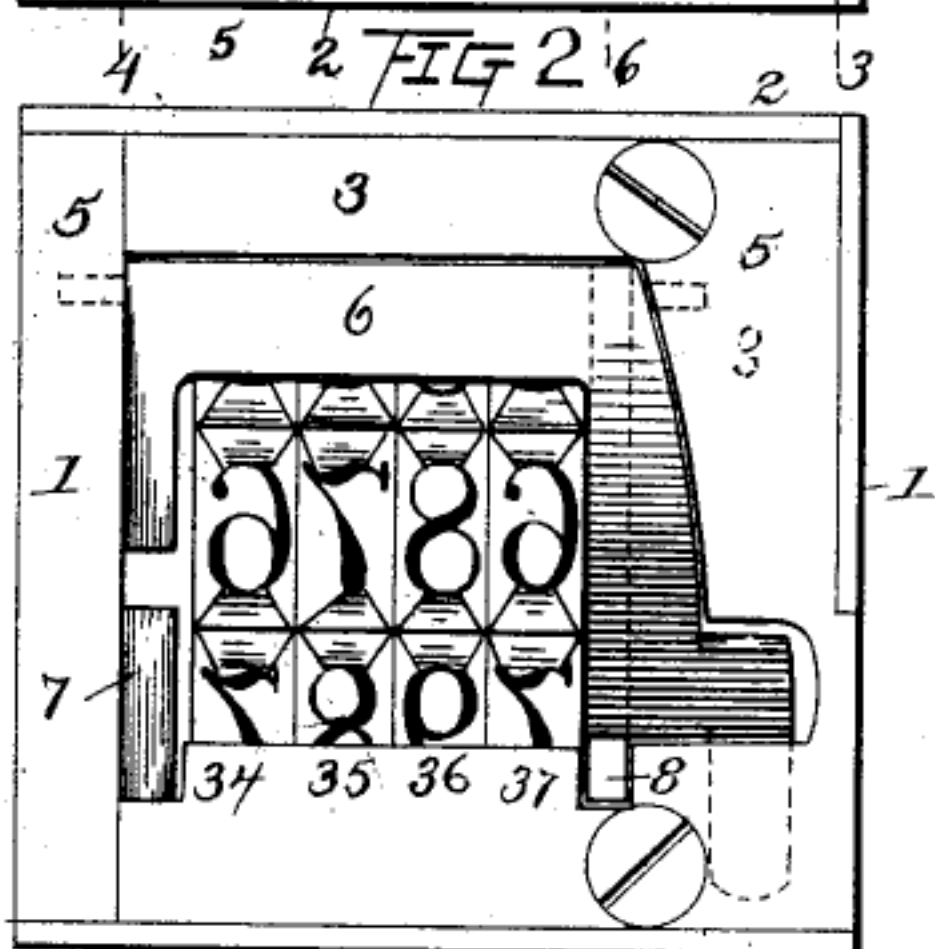
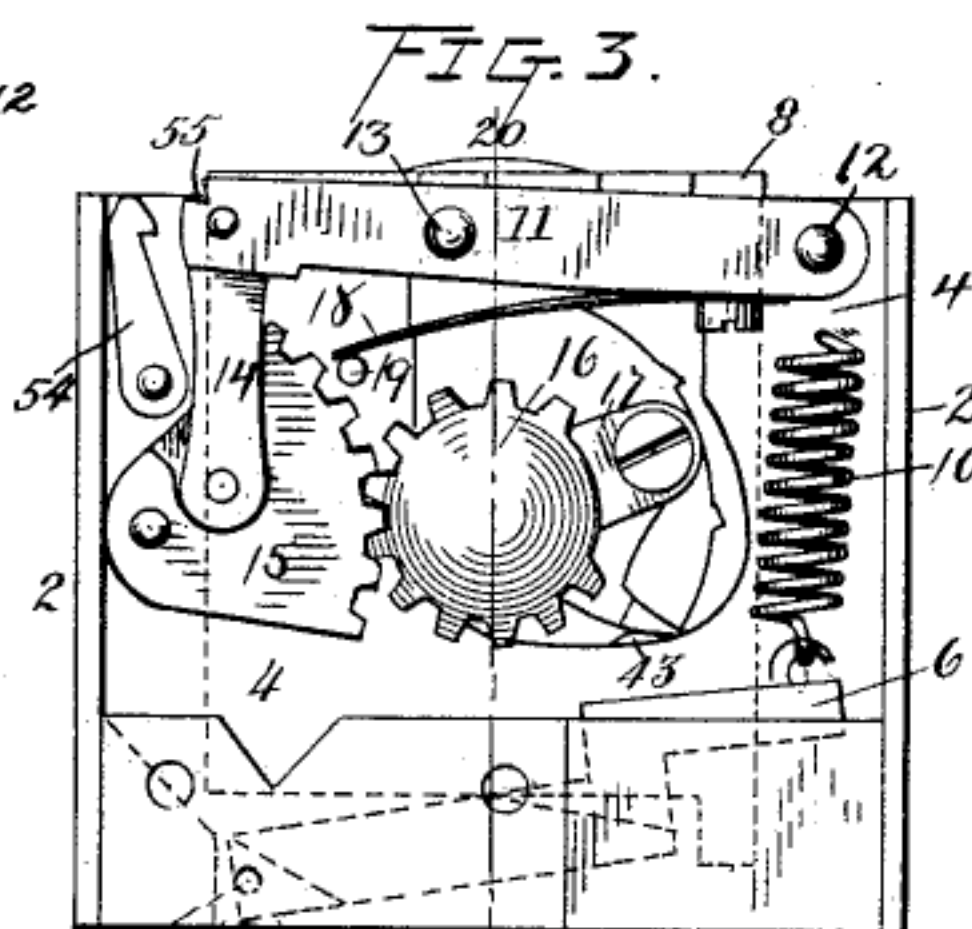
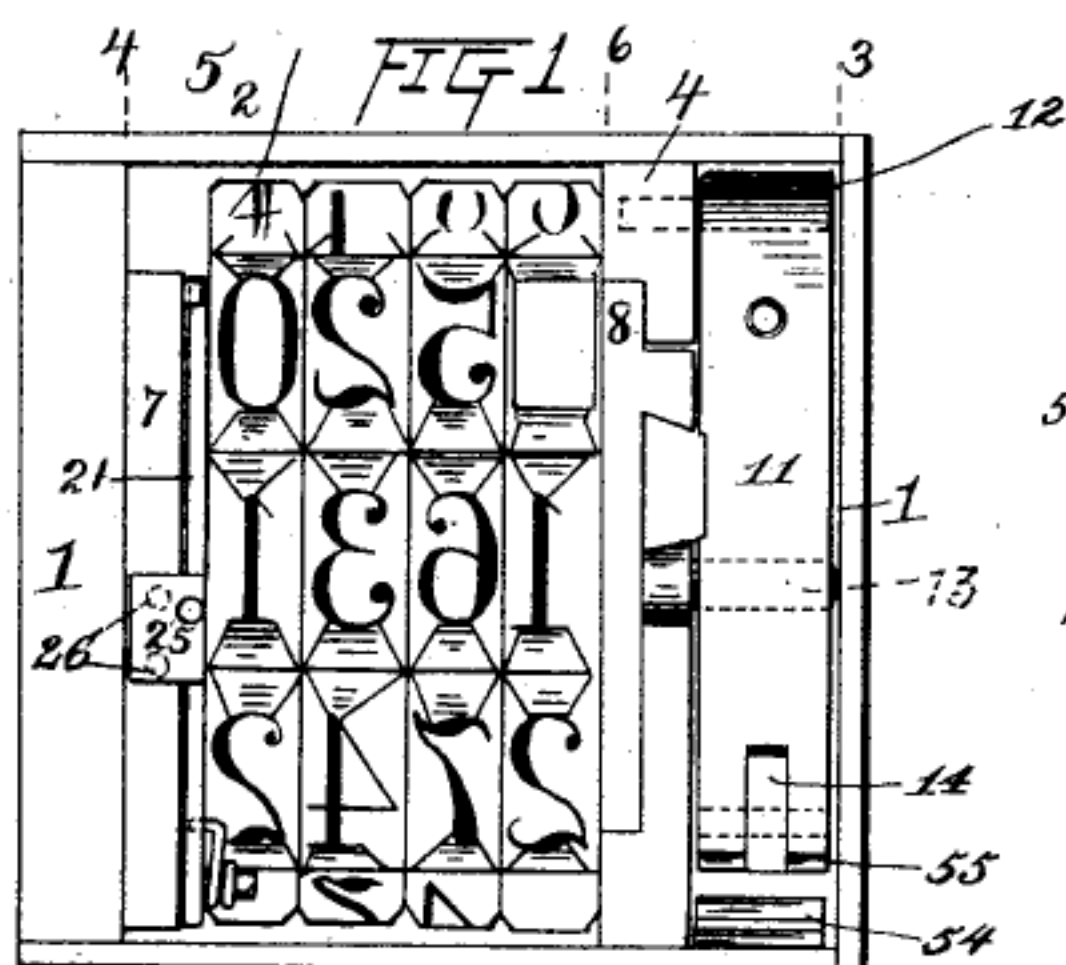


FIG 6

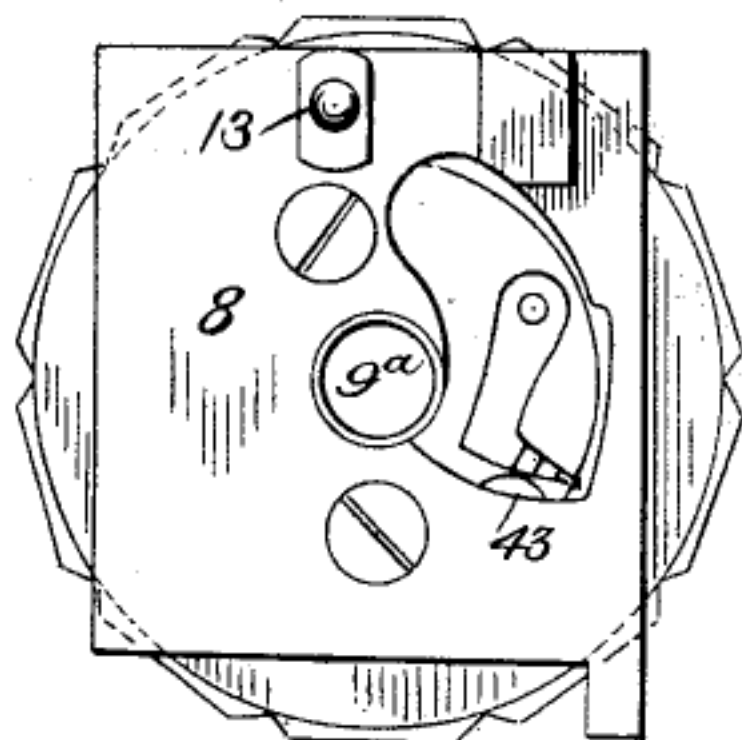
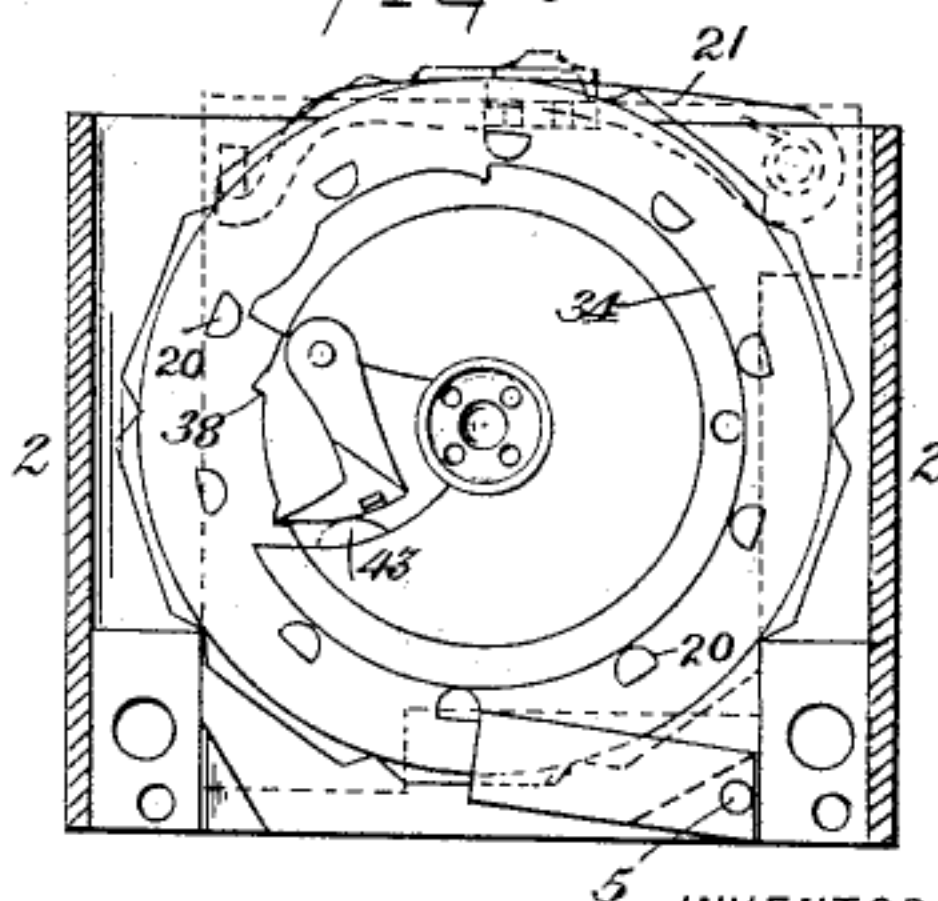


FIG 5



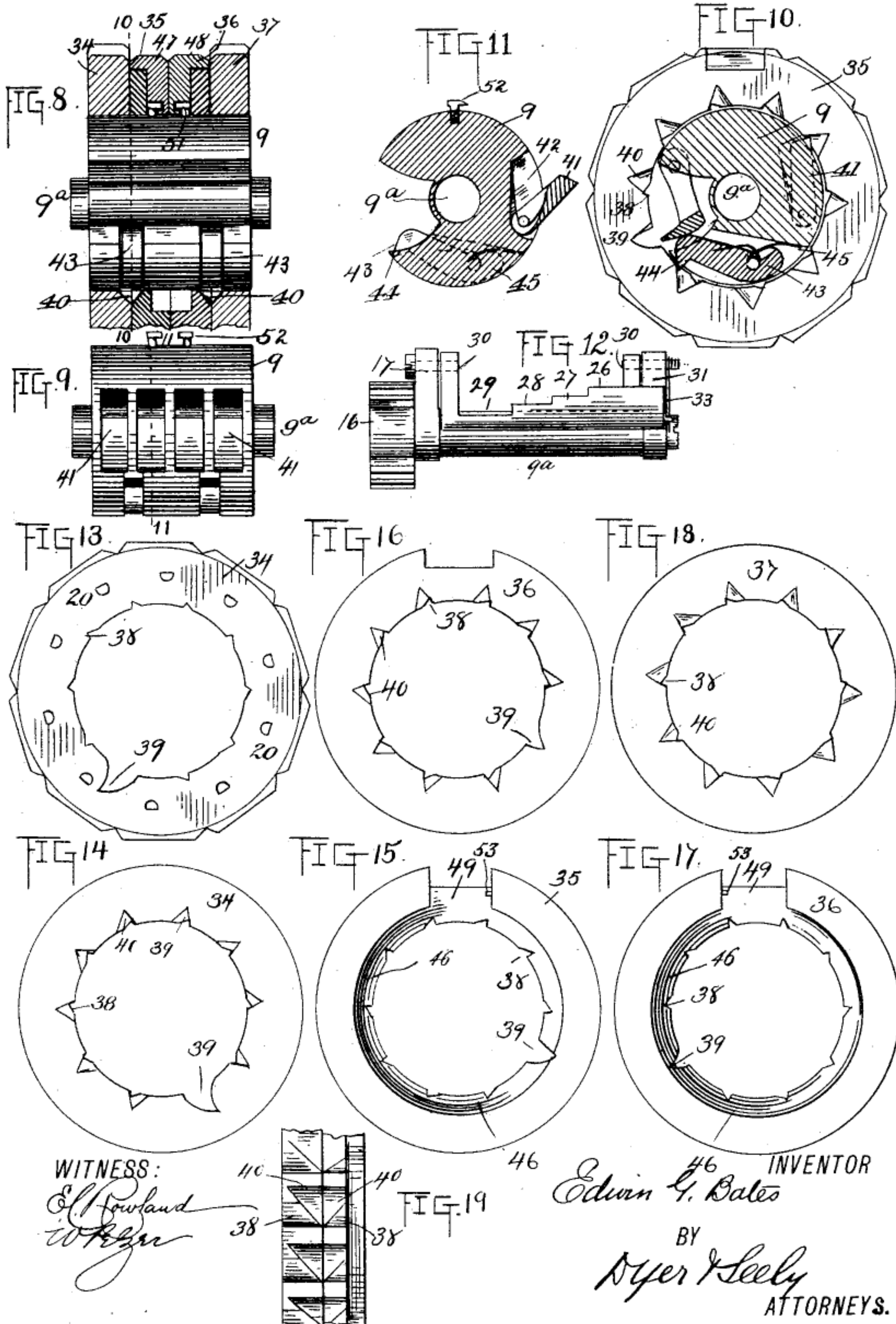
WITNESS:
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W. H. Healy

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E. G. BATES.
CONSECUTIVE NUMBERING MACHINE.

No. 484,389.

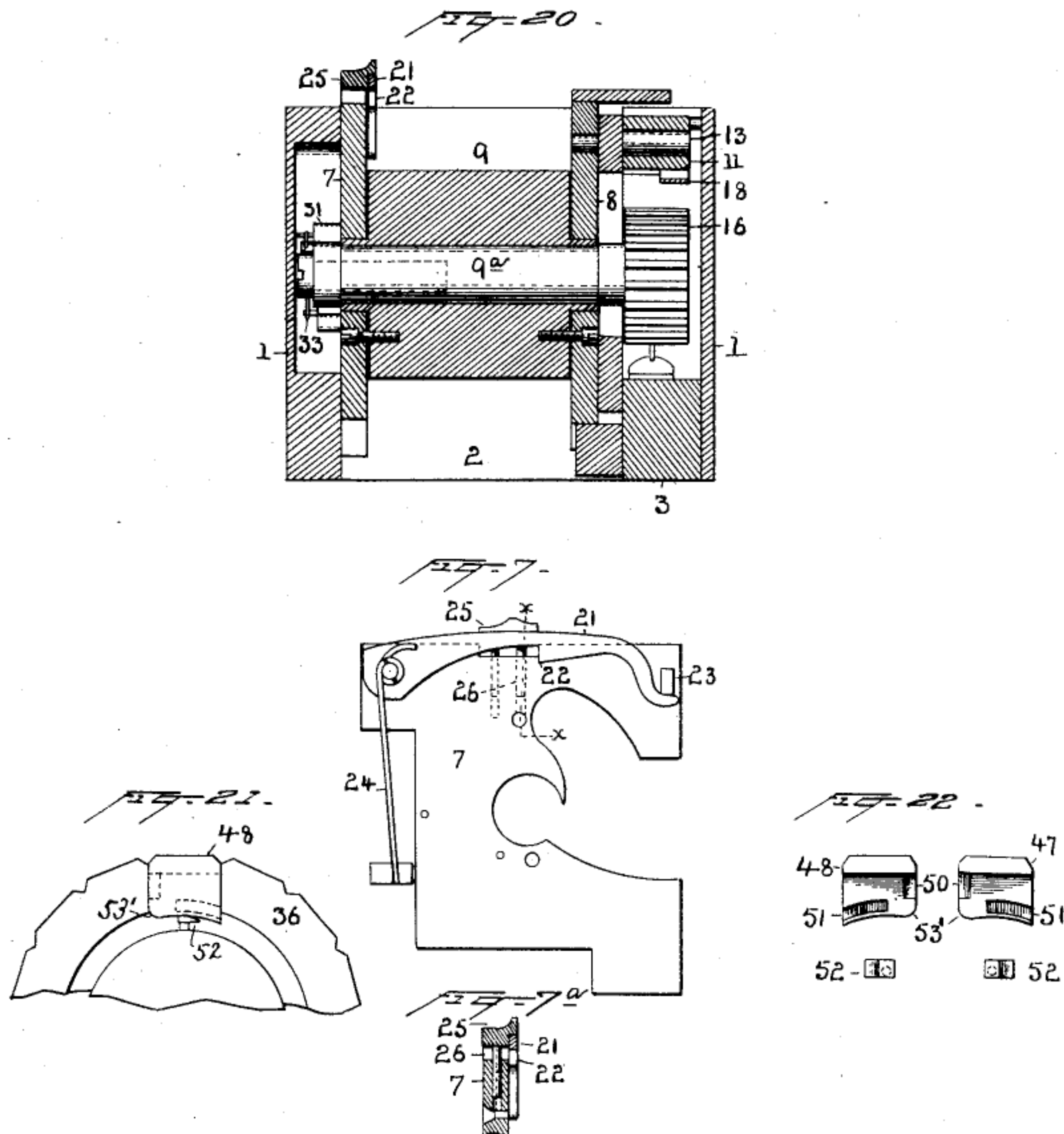
Patented Oct. 18, 1892.



E. G. BATES.
CONSECUTIVE NUMBERING MACHINE.

No. 484,389.

Patented Oct. 18, 1892.



Witnesses
Norris A. Clark,
W. F. Oberly

Inventor
E. G. Bates
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Hyer & Luby

UNITED STATES PATENT OFFICE.

EDWIN G. BATES, OF NEW YORK, N. Y., ASSIGNOR TO THE BATES
MANUFACTURING COMPANY, OF NEW YORK.

CONSECUTIVE-NUMBERING MACHINE.

SPECIFICATION forming part of Letters Patent No. 484,389, dated October 18, 1892.

Application filed April 25, 1890. Serial No. 349,452. (No model.)

To all whom it may concern:

Be it known that I, EDWIN G. BATES, a citizen of the United States, residing at New York city, in the county and State of New York, have invented a new and useful Improvement in Consecutive-Numbering Machines, of which the following is a specification.

My invention relates to machines for printing consecutive numbers, designed particularly to be set up with type in a printer's form and to advance the number printed by it at each impression; and my object is generally to increase the effectiveness, simplicity, and compactness of machines of this general character.

More particularly my objects are to simplify and increase the efficiency of the mechanism employed to rotate the type-wheels, to effect the locking of the type-wheels from movement for a short space of time after the impression has been made, so that the impression will not be blurred, and to provide mechanism whereby the turning of the printing-wheels is controlled, so that they will not be brought by the turning movement beyond their proper printing position.

In carrying out my invention I employ a hub upon which the type-wheels are supported, said hub and type-wheels having a reciprocating motion communicated to them by the platen of the printing-press, and said reciprocating motion being multiplied and converted into a turning movement which effects the rotation of the numbering-wheels. The numbering-wheels are notched on their inner peripheries with ten notches, as is usual, each numbering-wheel except the last one of the series having one notch deeper than its remaining notches and of less depth than the deep notch of its adjacent lower printing-wheel. Teeth or pawls are adapted to work in said notches, the said teeth or pawls decreasing in length in the same direction as do the deep notches on the type-wheels—that is to say, the notches on the units-wheel and the longest tooth or pawl operate together. These teeth or pawls are preferably cut or formed from the same piece and are moved together within a recess in the hub, so that when the tooth opposite a wheel is in the deep notch

thereof the tooth or pawl for the next higher wheel will be in position to enter one of its notches and move it the space of one printing character. This pawl is oscillated, preferably, through a segmental gear engaging with a rack that receives motion through a system of levers operated by the downward movement of the printing-wheels. The operation of the levers communicates to said rack an increased movement on its toothed face, so that considerable turning movement is communicated to the segmental gear and consequently to the shaft controlling the pawls. The units type-wheel is provided on one of its sides with ten pins or projections, one for each printing character. Pivoted in position so that the movement of the platen will force one end of it downward is a lever upon which is mounted a printing-period, which has a shouldered portion on it, which portion when it is forced downward is adapted to come in front of one of said pins and thereby prevent the turning of the units type-wheel and consequently of the other type-wheels, and therefore preventing all the wheels from rising until the pin becomes disengaged, thereby releasing said units-wheel and consequently permitting it to turn and, with the other wheels, rise. This shouldered lever is so arranged that it is pressed by the platen of the printing-machine before the types are, and therefore before the impression is made the type-wheels are locked in the printing position. When the platen leaves the types, this lever is the first to rise, and as its shoulder is of some length the type-wheels are held in the printing position until the platen has cleared them. At this point the pin in engagement with the shoulder of the lever becomes disengaged, and thereupon said units-wheel is permitted to move and, with the other wheels, rise. By this arrangement the blurring of the impression is prevented.

The type-wheels and hub are secured to end pieces which rest upon a pivoted bridge between a portion of which and the stationary portion of the frame a spring is arranged. When the platen forces the type-wheels downward, this bridge is also forced downward and the spring distended. When the platen has left the type-wheels, this spring tends to re-

turn the bridge to its normal position, returning the type-wheels to their highest position at the same time. While the type-wheels are being brought to their highest position, the lever before mentioned as connected to the rack acts to turn the rack in the opposite direction and thereby bring the pawls into position to engage with another notch, the lever which is depressed by the platen having its fulcrum on a stationary part of the machine and being connected with the moving part of the machine to effect this movement. This lever has a notch cut on it, with which a pivoted hook on a stationary part of the frame is adapted to be engaged when the lever is in its lowest position. This permits of the turning in one direction of any of the type-wheels, so that the setting of the machine may be effected. I also employ two sets of detents, one set adapted to engage with notches on the printing-wheels to prevent backward movement of the type-wheels and another set engaging with other notches, but to prevent movement of the type-wheels in the opposite direction. I also employ a drop-cipher or adjustable type-section to secure the general efficiency of my machine.

Other features of my invention will appear in the subjoined description, and be pointed out in the claims.

In the accompanying drawings, forming a part of this specification, Figure 1 is a top plan view of my improved consecutive-numbering machine. Fig. 2 is a bottom plan view thereof. Fig. 3 is a side elevation, looking from the right of Fig. 1, with the parts to the right of the line 3 3 removed. Fig. 4 is a similar view, looking to the left of Fig. 1, with the parts to the left of the plane of the line 4 4 removed. Fig. 5 is a similar view, looking from the left of Fig. 1, with the parts on the plane of the line 5 5 removed. Fig. 6 is a similar view of certain of the parts, taken looking from the right of Fig. 1, with the parts to the left of the plane taken on the line 6 6 removed. Fig. 7 is an elevation of the units locking-lever. Fig. 7^a is a cross-section of Fig. 7 on the line *x x*. Fig. 8 is a plan view looking down on the recess of the hub, the hub being in elevation and the type-wheels in section. Fig. 9 is a plan view looking at the hub on the opposite side to the recess, the parts being in elevation. Fig. 10 is an elevation of one of the type-wheels, the hub and certain other parts being in section, the view being taken on the line 10 10 of Fig. 8. Fig. 11 is a section taken on the plane of the line 11 11 of Fig. 9. Fig. 12 is a plan view of the oscillating pawls and certain connections. Fig. 13 is an elevation of the units printing-wheel, looking from the left of Fig. 1. Fig. 14 is a view of the other side of the said units-wheel. Fig. 15 is an elevation of the tens-wheel, taken from the right of Fig. 1. In Fig. 10 the other side of this tens-wheel is shown. Fig. 16 is an elevation of the hundreds-wheel, taken looking from the right of Fig. 1. Fig.

17 is an elevation of the opposite side of said hundreds-wheel. Fig. 18 is an elevation of the thousands printing-wheel. The opposite side of the thousands-wheel is like Fig. 13, except it has no pins or deep notch. Fig. 19 is a detail showing the relationship which exists between certain of the notches of the units and tens wheels and also between the hundreds and thousands wheels. Fig. 20 is a cross-section on the line 20 20 of Fig. 3, the type-wheels being omitted. Fig. 21 is a side view of a portion of a type-wheel 36, looking from the left of Fig. 8. Fig. 22 is a view showing in elevation the two cipher-sections and top views of the hooks which engage therewith.

The operating mechanism is inclosed in a suitable box or case comprising end plates 1 1, side plates 2 2, bottom plate 3, and partition 4. In one of the said plates 1 and the partition 4 is pivoted at 5 5 a bridge 6. Resting upon this bridge are the side plates 7 8, which carry the hub 9, which supports the type-wheels, which are located upon the hub between said plates. This hub, as will be seen in Figs. 10 and 11, is recessed in such manner that at no part is the material thereof altogether cut away. This method of forming the hub insures that there will be no tendency to bind by the separation of the sides of the hub, as would occur if the hub were cut all the way through. To the free end of the bridge 6 one end of the spring 10 is attached, the other end of the spring being connected to plate 4 or other fixed part of the frame. The end 6' of the bridge bears against the bottom edge of plate 7. The side plates 7 8 have a reciprocating motion, the inward movement being communicated to them by the platen striking the type-wheels and forcing them down, and the upward movement being communicated by means of the bridge 6, which rests against said plates, said bridge being drawn to its highest position when the platen is removed by the spring 10.

The inward movement of the type-wheels and plates 7 8 is a slight movement. This movement is utilized to effect the oscillation of the operating-pawls. In order to give the pawls the required extent of oscillation, I employ mechanism for multiplying this movement, of which the following is a description: A lever 11, fulcrumed at 12 on the partition 4, is connected by the pin 13 with the plate 8, so that the inward motion of the said plate will be communicated to the lever. To the free end of said lever is pivoted another lever 14, the other end of which is pivoted to the segmental rack 15, the inner end of which is pivoted to the partition 4, as shown in Fig. 3. This rack engages with a pinion or toothed segment 16, rigidly secured to shaft 9^a, (shown in Fig. 12,) which shaft carries arms 17, Fig. 3, and 31, Fig. 4, rigidly secured thereto, in which the oscillating pawls are hung. A spring 18, secured to the under side of the lever 11, has its free end resting on the pin 19, projecting from the partition 4, so that the

tendency of said spring is to force the lever 11 outward. In operation the platen forces the type-wheels downward with the said plate 8, carrying the lever 11, thereby forcing the rack 15 downward and moving the pinion 16, so as to carry the arms 17 and 31 around and thus oscillate the pawls. When the platen is removed, spring 18 acts in conjunction with the spring 10 to throw the lever upward and the rack and pinion are returned in the opposite direction, thus turning the arms 17 and 31, with the pawls, to their first position. By this operation the simple downward movement given to the type-wheels is converted into a multiplied movement for the pawls, and the type-wheels are rotated by the pawls the required distance, the downward movement of the type-wheels bringing the pawls into position to engage a new notch in the type-wheels and the upward movement of the type-wheels forcing the pawls to revolve the type-wheel or type-wheels the space of one printing character to the position shown in Fig. 3.

The units-wheel is provided with ten projections 20, one for each printing character, projecting at right angles from the side thereof nearest the plate 7. Pivoted on the face of the plate 7, opposite pins 20, is a lever 21, which is shouldered at 22, as shown in Fig. 7, and provided with a stop 23, projecting from said plate 7, and a spring 24, the tendency of which is to maintain said lever in the position shown in said figure. A section 25, carrying the period or dot, is mounted on the plate 7, so as to have an in-and-out movement in relation thereto, suitable provision being made to prevent said section from dropping out. Pins 26, projecting from the underside of said section, enter suitable holes in the top of said plate 7 and serve to guide said section. A flange of said section projects over the top of lever 21. In operation the platen, striking the dot or period on section 25, which is in an advanced position with relation to the type-wheels and remainder of the machine, forces said section inward, and thereby carries with it the lever 21, the shoulder of which is brought opposite one of the pins 20 on the units-wheel, thereby locking said wheel and consequently the wheels behind it from further movement in one direction. As the platen leaves the numbering-machine the spring 24 will force the lever 21 and section 25 outward after it and the type-wheels will be locked from movement until the shoulder at 22 is altogether out of the way of the pins 20 of the units-wheel. By this arrangement the blurring of the impression is avoided, as the type-wheels are held stationary for a certain space of time before the impression is taken, while the impression is being taken, and after the impression has been taken.

The oscillating pawl is provided with a tooth for each printing-wheel, the largest tooth 26 being inside the units-wheel, the next in depth 27 being inside the tens-wheel, the next 28 inside the hundreds-wheel, and the

smallest tooth 29 being inside the thousands-wheel. These teeth are preferably formed from the same piece of metal and are provided with side arms 30 30, one of which is pivoted in the arm 17, which is rigidly secured to and carried by the shaft 9^a, and the other of which is pivoted in an arm 31, also rigidly secured to the other end of said shaft. The spring 33 is arranged, as shown, between the arm 31 and the pawls and the pawl-carrier, the tendency of which is to throw the pawls always outward.

34 is the units-wheel, the opposite sides of which are shown in Figs. 13 and 14. 35 is the tens-wheel, the opposite sides of which are shown in Figs. 10 and 15. 36 is the hundreds-wheel, the opposite sides of which are shown in Figs. 16 and 17. 37 is the thousands-wheel. Each of these wheels, except the thousands-wheel, is provided with nine shallow notches 38 and one deep notch 39. The thousands-wheel has ten uniform notches 38. These notches are the ones with which the pawls engage for the purpose of effecting the rotation of the type-wheels in consecutive order.

In addition to the notches 38 and 39, ten other notches 40 are provided on one side of each type-wheel. As shown in Fig. 19, the notches 40 and 38 descend in opposite directions. These notches 40 are provided in the type-wheels for the purpose of locking them in the positions into which they are moved by the pawl, so that they will not be carried by the momentum which they attain farther than their proper positions. To prevent a backward throw of the type-wheels, I provide for each wheel a detent 41, pivoted in the recesses in the hub 9, as shown at Fig. 11, each of said detents being provided with a spring 42, a recess being formed in the under side of said detent to receive said spring, and the tendency of which spring is to throw the detent outward, as shown in said figure. It will be seen that by providing one of these detents for each wheel the movement of that wheel is permitted in the increasing direction; but its movement in a backward direction is prevented. Pivoted in other recesses in the hub 9 are detents 43, each of which carries a tooth 44. A hair-spring 45, arranged as shown in Figs. 10 and 11, tends to throw said detent inward, as shown in Fig. 11. One of these detents is provided between the units and tens wheels and another between the hundreds and thousands wheels. Their outward movement to lock the two wheels between which they are located is effected by the downward movement of the pawls, which, coming in contact with the free ends of said detents, as shown in Fig. 10, forces them outward into the notches 40 on the type-wheels, two of which notches will be in the position shown in Fig. 19, so that the tooth on the detent can enter the notches on the two adjacent wheels and lock both wheels for the time from further forward movement. The opposing faces of the wheels in connec-

tion with which the detents 43 operate are cut away, as shown at 46 in Figs. 15 and 17. It will be seen from this description that when the platen of the machine is away from the type-wheels the detents 41 and 44 are both in position, so that no movement of the type-wheels can take place, both of said detents being in engagement with the notches 40. Therefore the type-wheels are held from any tendency to rotate while the platen is away from them, the pins 20 and lever 21 holding the wheels from turning while the impression is being taken.

The loose cipher-sections 47 and 48, with which the tens and hundreds wheels are provided, are L-shaped in cross-section, the said wheels being cut away to about half their thickness to receive said sections, as shown at 49, Figs. 15 and 17. The horizontal arm of the L-shaped sections carries the printing character and the vertical arm is recessed at one side at 50. A pin 53, Figs. 15 and 17, projecting from the mortise in the type-wheels, enters this recess 50 and prevents the cipher-section from dropping out altogether. The vertical arm of the cipher-section is also provided with the longitudinal recess 51. On the hub 9, Fig. 11, are carried wipers 52, one for each type-section. In operation as the type-wheels bearing this loose section are turned the rounded corner 53' of the drop-section will be brought in contact with the beveled edge of the wiper and forced outward to the printing position. When it is desired to set the machine, however, to begin printing at "1," the type-wheels are first pressed to their extreme inward position, in which position they are locked by pressing the hook 54 into the notch 55 in lever 11, Fig. 3. Then the type-wheels bearing the drop-sections are turned until they are forced outward by the wiper 52. They are then turned until the drop-sections is beyond a wiper 52, whereupon the drop-sections can be forced into their lowest positions, and by turning back the type-wheel a flange or projection of the wiper will enter the recess 51 and hold the same below the printing-surface or out of printing position.

Having thus described my invention, what I claim is—

1. In a consecutive-numbering machine, the combination, with the reciprocating printing-wheels, of a system of levers moved inward by the inward movement of the type-wheels and gearing between said levers and printing-wheels for converting the inward movement of said levers into a turning movement of the said wheels, substantially as set forth.

2. In a consecutive-numbering machine, the combination for rotating the printing-wheels, of a lever pivoted on a part stationary relatively to the printing-wheels, a connection between said lever and a part movable with the printing-wheels, a pivoted rack, a connection between said rack and pivoted lever

made at a distance from the pivot of the rack, and gearing between said rack and the operating-pawls, substantially as set forth.

3. The combination, with a series of printing-wheels notched on their inner peripheries, of a hub, detents pivoted to said hub, a spring acting to force said detents out of said notches, and operating-pawls adapted to force said detents in the opposite direction, substantially as set forth.

4. The combination, in a consecutive-numbering machine, of a series of operating-pawls, two sets of detents, one set adapted to prevent movement of the printing-wheels in the increasing direction and the other set adapted to prevent movement in a backward direction, and said printing-wheels provided on their inner peripheries with a set of notches adapted to coact with the pawls and one set of detents and provided on one face with notches for the other set of detents, substantially as set forth.

5. In a consecutive-numbering machine, the combination, with a series of printing-wheels and pawls therefor, of a lock for said wheels, comprising a pivoted shouldered lever, a spring acting thereon and normally holding the same above the periphery of the printing-wheels, and projections on one of said wheels normally out of engagement with said lever, but in position to be engaged thereby, whereby in printing the locking-lever is first moved to lock the wheels, printing is then effected, and the lock is raised by its spring to release the printing-wheels, substantially as described.

6. In a consecutive-numbering machine, the combination, with a series of printing-wheels and pawls therefor, of a locking device for said wheels to lock said wheels from turning before, after, and while the impression is being taken and comprising a detent and co-operating pins or devices carried by one of the wheels, and a projecting printing-section carried by the framework and overlapping said detent, whereby when the projecting printing-section is pressed in by a printing-platen the detent will be moved, substantially as set forth.

7. In a consecutive-numbering machine, the combination, with a series of printing-wheels and pawls therefor, of a printing-section independently mounted with respect to said wheels and movable in and out in a straight line, a pivoted shouldered lever adapted to be operated by the movement of said printing-section, and pins on one of said printing-wheels, substantially as set forth.

8. In a consecutive-numbering machine, the combination, with the type-wheels and supporting-hub therefor and pawls for advancing the type-wheels, of a pivoted bridge, plates between the bridge and hub, and a spring connected to the bridge for moving it in one direction, substantially as set forth.

9. In a consecutive-numbering machine, the combination, with a box or casing, of a bridge

5 pivoted therein, printing-wheels movable in a direction to depress said bridge, means for advancing the wheels, said wheels having an axis supported in suitable pieces resting on the bridge, and a spring to return the bridge to its normal position, substantially as set forth.

This specification signed and witnessed
this 22d day of April, 1890.

EDWIN G. BATES.

Witnesses:

D. H. DRISCOLL,
W. PELZER.

NEXT ITEM

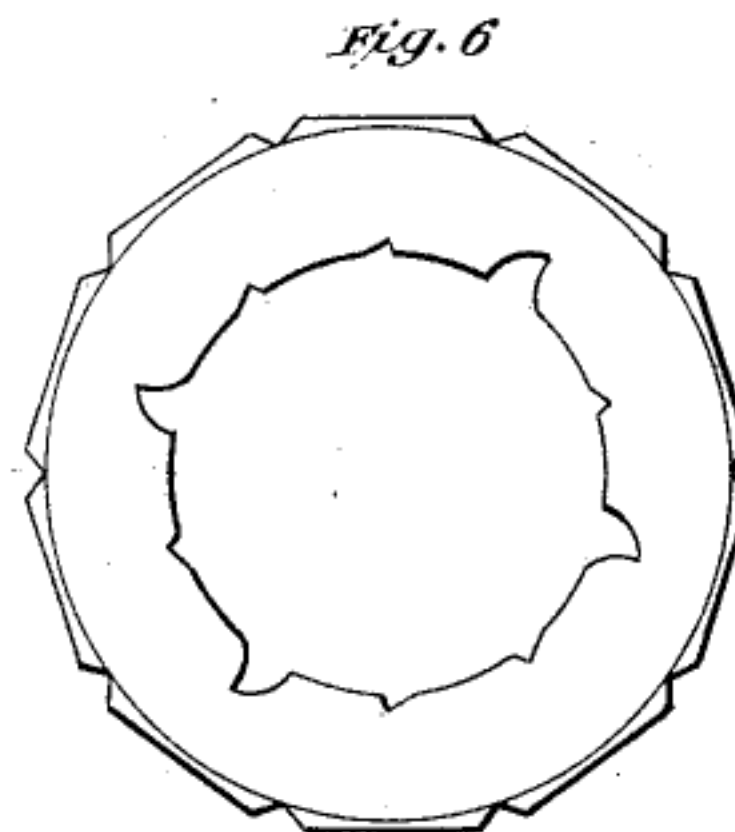
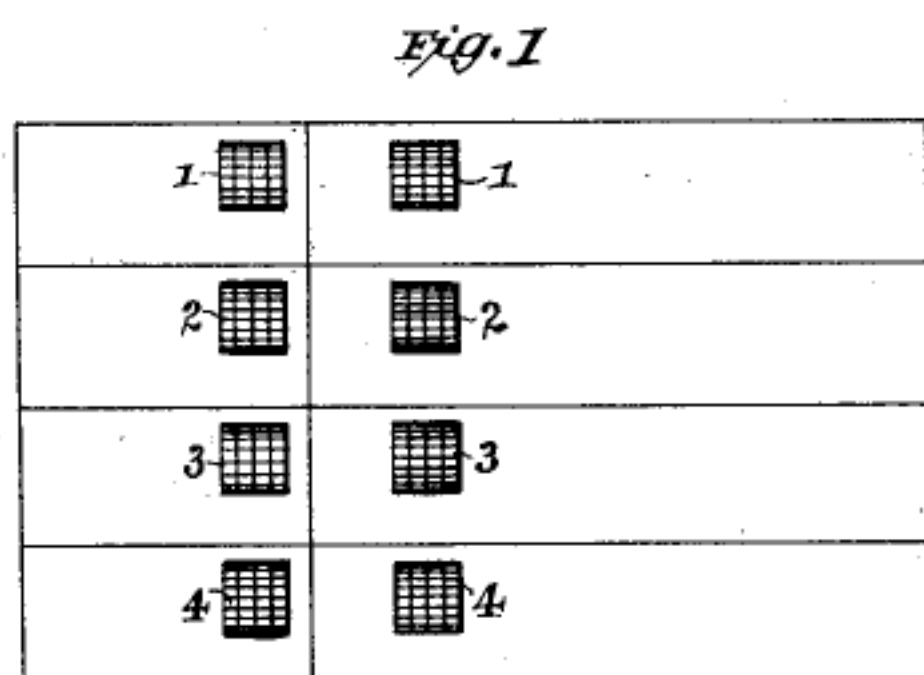
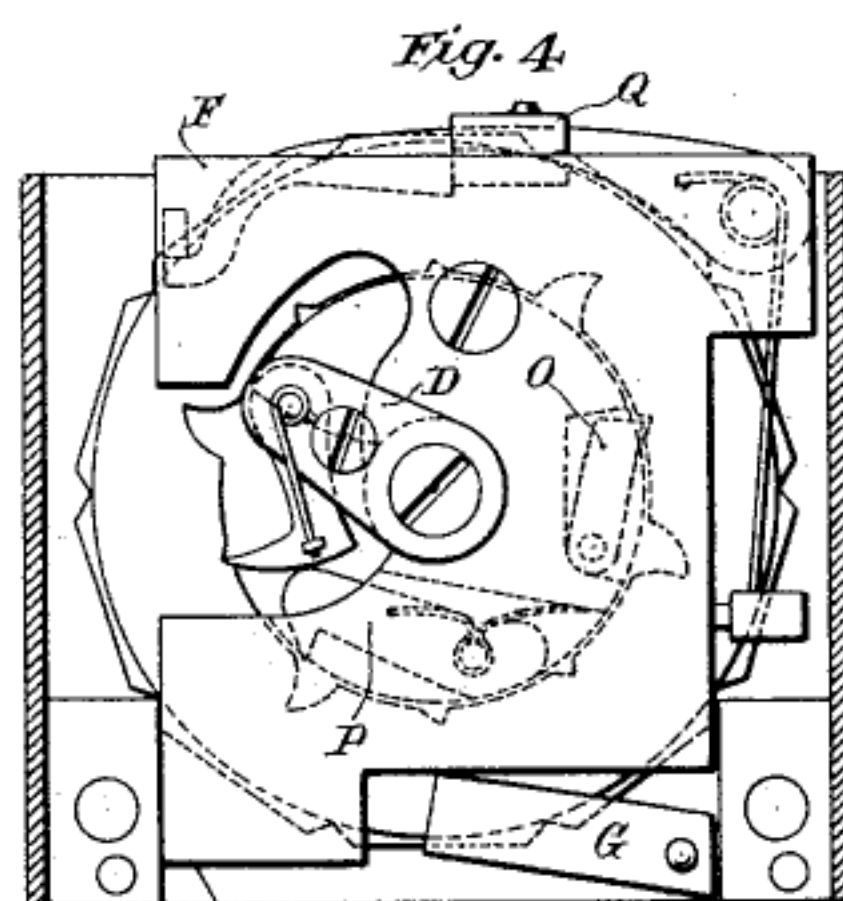
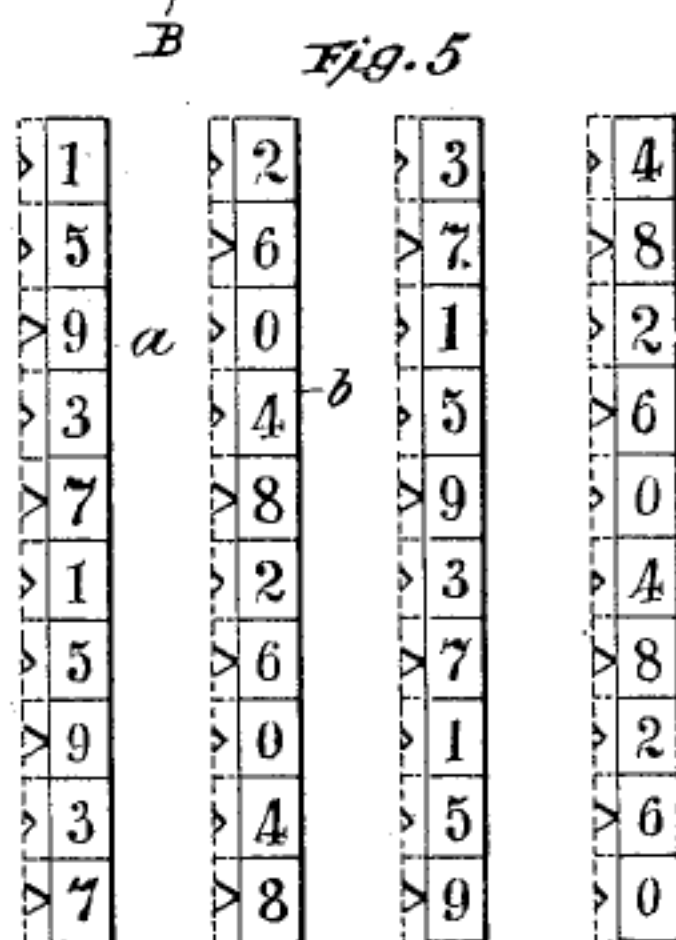
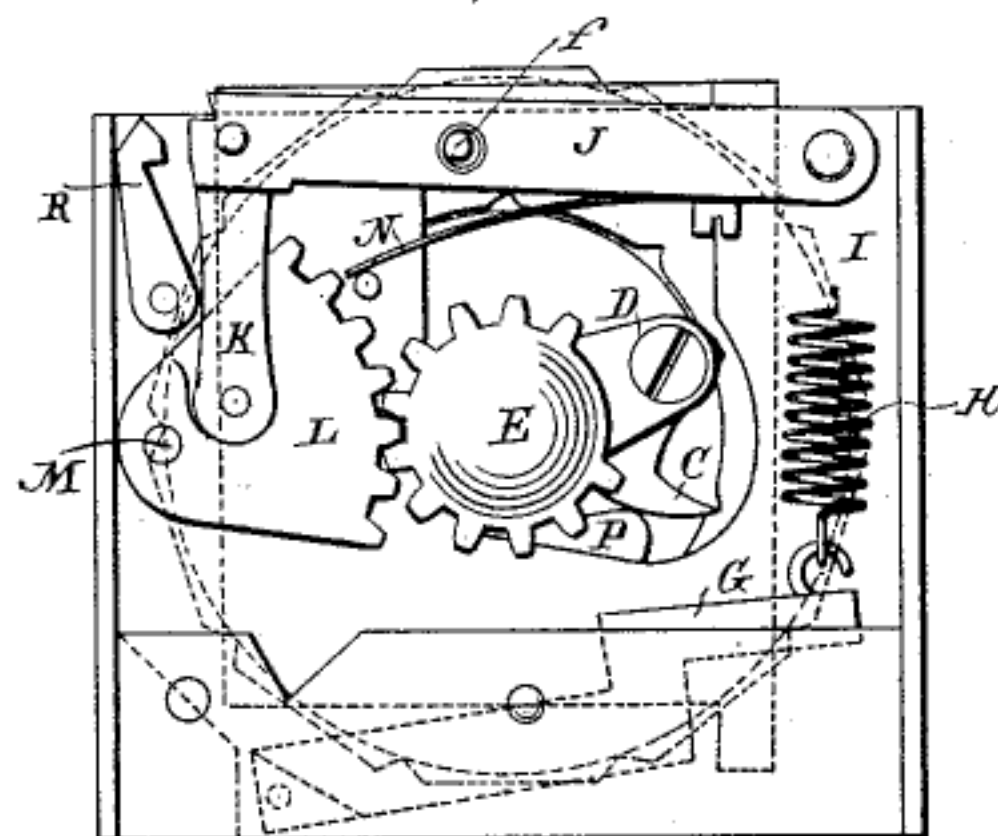
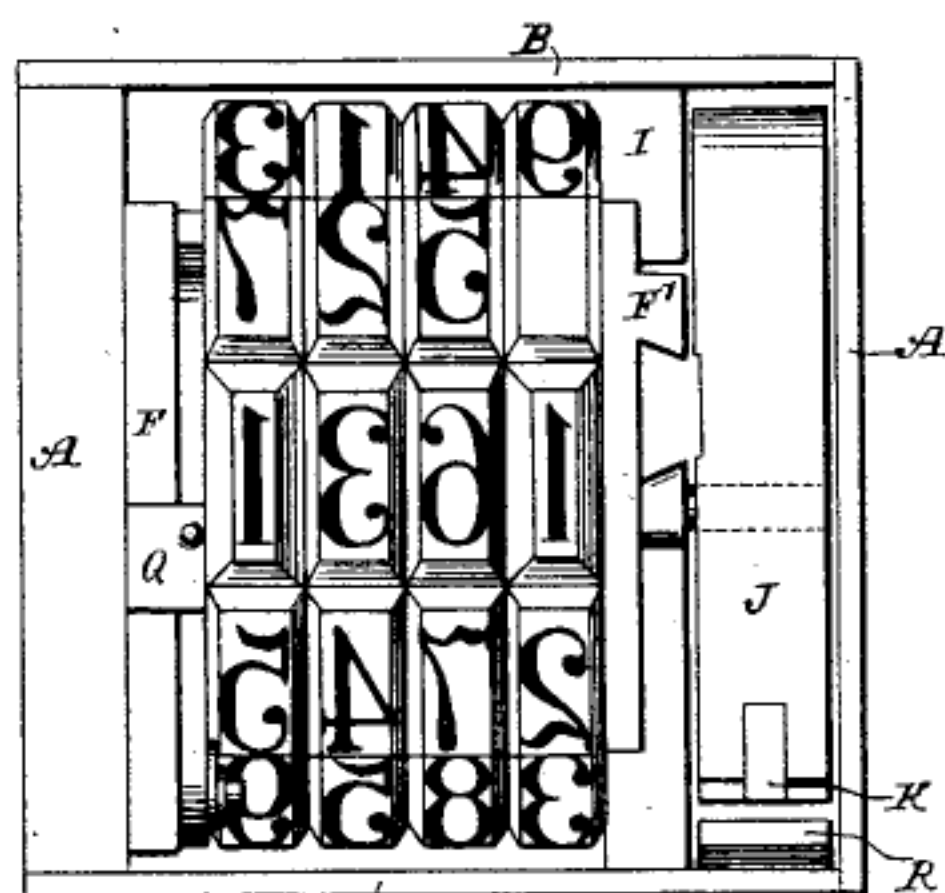
(No Model.)

E. G. BATES.

MACHINE FOR CONSECUTIVELY NUMBERING CHECKS, BONDS, &c.,
IN SHEETS.

No. 484,390

Patented Oct. 18, 1892.



Witnesses:

Raphael Netter
W. E. Egan

Inventor

Edwin G. Bates
by J. F. Egan
Attorneys

UNITED STATES PATENT OFFICE.

EDWIN G. BATES, OF NEW YORK, N. Y., ASSIGNOR TO THE BATES
MANUFACTURING COMPANY, OF NEW YORK.

MACHINE FOR CONSECUTIVELY NUMBERING CHECKS, BONDS, &c., IN SHEETS.

SPECIFICATION forming part of Letters Patent No. 484,390, dated October 18, 1892.

Application filed September 15, 1890. Serial No. 365,086. (No model.)

To all whom it may concern:

Be it known that I, EDWIN G. BATES, a citizen of the United States, residing at New York city, in the county and State of New York, have invented a certain new and useful Improvement in Machines for Consecutively Numbering Checks, Bonds, &c., in Sheets, of which the following is a specification.

The present method of numbering checks, bonds, bond-coupons, &c., when the same occur a number on a sheet is to print the check, bond, bond-coupons, &c., leaving a space for the number, and then by separate successive impressions numbering each check, &c. This method must necessarily be followed with the consecutive-numbering machines now known, it being impossible to employ such machines where more than one check, &c., is to be printed at a single impression either in the type-forms, where type are employed as the printing characters, or in blank forms after the engraved plates have been used.

The object of my invention is a consecutive-numbering machine which may be set up with type when a number of checks are printed at the same impression or used to number a sheet of checks, &c., at a single impression when the same have been produced in blank.

For a machine adapted to print, for example, five checks and five coupons on a sheet at the same operation I employ ten numbering-heads in two rows of five each. The mechanism of each numbering-head, so far as all the parts except the units-wheel is concerned, remain as heretofore. The units-wheel, however, is changed, both as to the order of the printing characters thereon and as to the notches with which the operative pawl engages. The units-wheel of the numbering-head designed to begin numbering with the unit will have the figures arranged thereon in the order of "1 6 1 6 1 6 1 6" and will have a deep or change notch for each figure "6." The units-wheel of the numbering-head designed to begin printing with "2" will have the figures arranged thereon in the following order: "2 7 2 7 2 7 2 7," with a change-notch for each figure "7." The units-wheel of the numbering-head designed to begin printing with "3" will have the figures arranged in the following order: "3 8 3 8 3 8 3 8," with a

change-notch for each figure "8." The units-wheel of the printing-head designed to begin printing with "4" will have the figures arranged in the following order: "4 9 4 9 4 9 4 9," with a change-notch for each figure "9." The units-wheel of the numbering-head designed to begin printing with "5" will have the figures arranged in the following order: "5 0 5 0 5 0 5 0," with a change-notch for each figure "5." When the first impression is taken, the column of numbers on both checks and coupons will read "1 2 3 4 5." When the next impression is taken, they will read "6 7 8 9 10," the change-notch of the numbering-head designed to begin printing with "5" having been operated at the first impression and having brought into printing position the numeral "1" on the tens-wheel. At the second impression the change-notches in the numbering-heads designed to begin printing with "1," "2," "3," and "4," respectively, are operated, and the numeral "1" on each of the tens-wheels thereof is brought into printing position, the tens-wheel of the last numbering-head remaining stationary, so that on the third impression the column will read "11 12 13 14 15." For succeeding impressions the operation will be similar. It will be noticed from the foregoing that the order of the figures on the units-wheels of all the numbering-heads bears a certain definite relationship, which is governed by the following principle, which serves, as a rule, to obtain the order of the figures to be carried by the units-wheel of any numbering-head: To the figure which the units-wheel is designed to print at the first impression add, to obtain the figure to be printed at the second impression, a number representing the number of numbering-heads employed in a column. For the figure to print the third impression add the same figure as before to the result first obtained. For the figures for further impressions continue adding to the right-hand figure last obtained the number representing the number of numbering-heads until the same figure is obtained used to print the first impression. The arrangement of figures for the units-wheel is now complete. To illustrate, take the units-wheel on the numbering-head designed to begin printing with "2," and suppose there are four

numbering-heads in a column. Then the second figure to be printed would be "2" plus the number of numbering-heads, four; result, "6," the second printing-figure. For the third figure add "4" to "6," with the result "10," the right-hand figure (cipher) being the third printing-figure of the units-wheel. For the fourth printing-figure add "4" to "0," with the result "4," the fourth printing-figure. For the fifth printing-figure add "4" to "4," result, "8," the fifth printing-figure. For the sixth printing-figure add "4" to "8," result, "12." The right-hand or unit of the resultant expression being the figure first employed need not be used, nor need further additions be made, as the result would be a duplication of the figures already obtained. The unit-wheel now will bear the figures "2 6 0 4 8 2 6 0 4 8," it being understood that ten printing characters are employed on each units-wheel. In other words, since each head is to print numbers in arithmetical progression, the progression in all cases having a difference of two or more, I arrange the numbers on the first or units wheel in each head in the order of the progression, the first number on each units-wheel being the first number in the progression which that particular head is designed to print. On the tens-wheel and each following wheel the numbers run from "0" to "9" in regular order, as in ordinary numbering-machines.

The position of the change-notches is found for the units-wheels by the following rule: When the result of any addition is two figures, it is an indication that the tens-wheel will be called upon to print, and a change-notch should be employed, so that the tens-wheel will be turned with the figure, the addition to which of the number representing the number of numbering-machines would produce as a result two figures. To illustrate, take the units-wheel of the numbering-head in a column of three designed to begin printing with "3." Then the figures on the wheel would be in the order "3 6 9 2 5 8 1 4 7 0" and the change-notches would occur at "9," "8," and "7."

It will be apparent from the foregoing that any of the known mechanisms employed for consecutive numbering-heads may be employed in a numbering-head embodying my invention.

In the accompanying drawings, illustrating my invention, Figure 1 is a diagram illustrating the arrangement of a number of numbering-heads in two columns for printing the numbers on four checks and their accompanying stubs at a single impression. Fig. 2 is a plan view of one of the numbering-heads. Fig. 3 is a side elevation thereof, looking to the left, with the side plate of the inclosing case removed. Fig. 4 is a side elevation, looking from the left, with the side plate on that side removed. Fig. 5 represents, diagrammatically, the development of the several units-wheels, the position of the notches also being

shown; and Fig. 6 is a side view of the units-wheel of the first numbering-head.

The mechanism shown in the drawings for operating the numbering-wheels is preferred by reason of its compactness and efficiency, and is the subject of an application for Letters Patent filed April 25, 1890, Serial No. 349,452.

The following will answer as a brief description of such mechanism:

A A are the two side plates of the case inclosing the mechanism, and B B are the end plates thereof. The printing-wheels are annular in shape and are operated through notches cut on their inner peripheries. They are mounted on a hub within a recess of which the oscillating pawls C operate, the said pawls being carried by arms D, which are rigidly carried by a stud, upon which is mounted the gear E. The hub, pawls, and printing-wheels are supported in two opposite side plates F F', which rest at their bottoms on a pivoted bridge G, the free end of which is connected by a coiled spring H to a partition I between the side plate A and plate F'.

When it is desired to print, the several heads are arranged in a form in any suitable frame or chase—such, for example, as used in type-printing—alone or in connection with other type, and the form which constitutes the printing-bed is used in connection with any well-known or suitable platen. (Not shown.) By this arrangement the impression of the platen of the printing-press effects an inward motion of the printing-wheels within the case of each head, the return movement thereof being effected through the bridge G and coiled spring H. This reciprocating or bodily movement of the type-wheels is utilized to effect their turning movement in the manner following: The lever J, pivoted to the partition I and connected to the plate F at f, carries at its free end a lever K, which is connected with a segmental rack L, turning on a stud M, extending from the partition, and is normally held slightly above the top of the case by the spring N. When the platen strikes the numbering-head, a depression of the numbering-wheels and lever K is effected, the downward movement of the lever acting through rack L and gear E, serving to oscillate the pawls C in one direction, their return oscillation being effected on the outward movement of the type-wheels, effected as above stated. In this manner the necessary rotary motion is given to the type-wheels step by step. The pawl-teeth and notches in the wheels being relatively arranged in the manner well understood, it is obvious that a regulated consecutive action of the type-wheels is the result. Suitable detents O P are employed to prevent undesirable motion in the type-wheels. A block to print the abbreviation "No." may be also employed, as indicated at Q, with suitable mechanism therefor, partly illustrated; also, there

may be employed a dog R to lock the lever K while setting the machine.

So far as the operation of the printing-head is concerned, it is of course immaterial whether a platen is moved against the printing-bed or whether the bed is itself moved to effect the printing.

In Fig. 1 the outer rectangle may indicate the outline of the chase, the parts marked 1, 2, 3, &c., being the printing-heads set up therein in the desired order.

The mechanism which more particularly relates to my present invention is shown in Figs. 1, 5, and 6. Fig. 6 shows the arrangement of shallow and change notches in the units-wheel *a* of the numbering-heads 11 of Fig. 1. *b* of Fig. 5 illustrates the arrangement of the figures and notches, and the relative depths of the latter of the units-wheel of the numbering-heads 22 of Fig. 1. *c* and *d* represent the same thing, respectively, of the numbering-heads 3 and 4 of Fig. 1.

It will be seen that by the construction and arrangement described the units-wheel in each head is advanced one space at each impression; but that instead of bringing the succeeding numeral into printing position it brings a numeral having a difference of two or more from the first into printing position, and that means are provided for advancing the tens-wheel every time the number in printing position on the units-wheel is so large that by adding the difference in the progression thereto a number of more than one figure is given, and, further, that the following wheels are advanced successively in the usual way as the numbers pass from tens to hundreds, &c.

I claim—

1. The combination, in a numbering-machine, of several numbering-heads arranged in the order in which their impressions are desired and adapted to print simultaneously, each numbering-head having several type-carrying wheels or bodies with figure-types, the first figure on the first or units printing-wheel in each head being the number to be first printed by said head, the second figure on said wheel being the same plus the number of numbering-heads, and so on for succeeding figures, the figures on the other wheels of each numbering-head being "0" to "9," consecutively, means for advancing the units-wheels of all the heads one figure at each impression, and means for advancing the other wheels of the numbering-heads successively as the numbers to be printed pass from units to tens, tens to hundreds, and so on, whereby as the numbering-machine is op-

erated all heads will print numbers and will be reset to print by a second operation numbers equal to the first plus the number of heads, substantially as described.

2. The combination, in a numbering-head for printing numbers of checks, &c., in arithmetical progression with a difference of two or more, of several wheels or bodies on which are printing-figure types, the first figure on the first printing-wheel being the number to be first printed, the second figure on said wheel being the same plus the difference in the progression, and means for advancing the first type-wheel one space for each impression and for advancing the other wheels successively as the numbers to be printed change from units to tens, from tens to hundreds, and so on, said means comprising a pawl operating on said first or units wheel, which wheel is provided with a notch for each type, said pawl being adapted to engage in the notches successively, the notch corresponding to each type representing a numeral which is so large that by adding the difference in the progression to it a number of two figures will be obtained, being a deep notch, so that the operating-pawl can advance the succeeding type-wheel, substantially as described.

3. The combination, in a numbering-machine, of several numbering-heads arranged in the order in which their impressions are desired, and adapted to print simultaneously, each numbering-head having several type-wheels on which are figure-types, the first figure on the first or units printing-wheel in each head being the number to be first printed by said head, the second figure on said wheel being the same plus the number of numbering-heads, and so on for succeeding figures, the figures on the other wheels of each numbering-head being "0" to "9," consecutively, and pawls for advancing said units-wheels one figure at each impression, said units-wheels having notches suitably arranged and in which the operating-pawl engages, there being a notch corresponding to each type, the notch corresponding to each type representing a numeral which is so large that by adding to it a number equal to the number of heads a number of two figures results, being a deep notch, whereby the pawl can advance the second wheel, substantially as described.

This specification signed and witnessed this 13th day of September, 1890.

EDWIN G. BATES.

Witnesses:

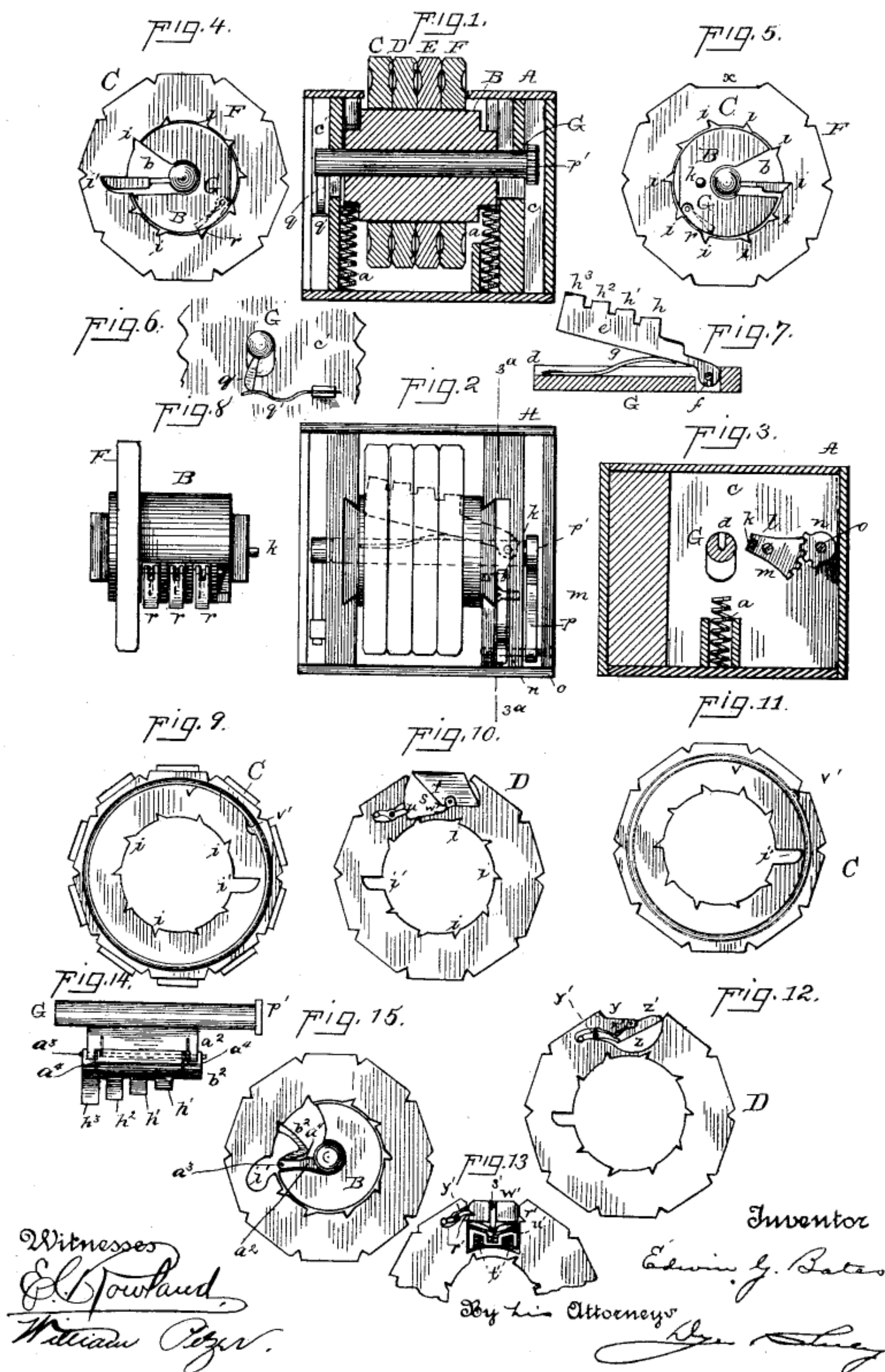
W. PELZER,
E. COURAN.

NEXT ITEM

E. G. BATES.
CONSECUTIVE NUMBERING MACHINE.

No. 484,391.

Patented Oct. 18, 1892.



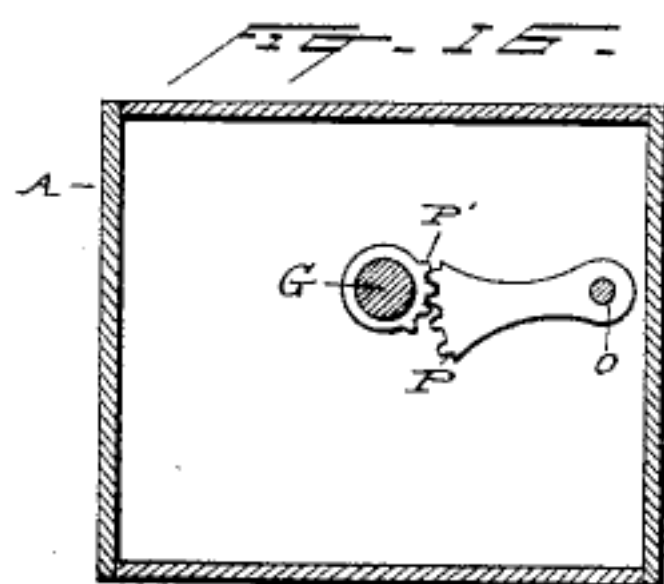
(No Model.)

2 Sheets—Sheet 2.

E. G. BATES.
CONSECUTIVE NUMBERING MACHINE.

No. 484,391.

Patented Oct. 18, 1892.



Witnesses
Thomas A. Clark.
A. J. Oberli

Edwin G. Bates
Inventor
By his Attorneys Dyer & Leely

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

EDWIN G. BATES, OF NEW YORK, N. Y., ASSIGNOR TO THE BATES
MANUFACTURING COMPANY, OF NEW YORK.

CONSECUTIVE-NUMBERING MACHINE.

SPECIFICATION forming part of Letters Patent No. 484,391, dated October 18, 1892.

Application filed November 14, 1887. Renewed April 12, 1892. Serial No. 428,780. (No model.)

To all whom it may concern:

Be it known that I, EDWIN G. BATES, of New York, in the county and State of New York, have invented a certain new and useful
5 Improvement in Consecutive-Numbering Machines, of which the following is a specification.

My invention relates to machines for printing consecutive numbers, designed, principally, to be set up with type in a printer's form and to advance the number printed by it each time that it prints; and my object is generally to increase the effectiveness, simplicity, and compactness of machines of this
15 general character.

More particularly my objects are to dispense with any extra devices for advancing the numbers and to cause the movement required to effect the change to be made directly by the pressure on the machine in printing; to enable the type-wheels to be placed close together, so as to print the figures close together and lessen the size of the machine; to have none of the operating parts
25 exposed; to provide means for retarding the turning movement of the type-wheels, so that they will not turn so quickly as to blur the impression, and to provide a simple and effective device by which a type-wheel may be
30 made to either print a cipher or to leave a blank at certain points.

My machine is of that general character employing two or more revolving type-wheels, usually four or more, each of which has on
35 its circumference raised or depressed type for printing figures from "0" to "9," the units-wheel first operating to print from "1" to "9" and then the tens-wheel moving to print "1," and so on, the wheels being arranged to
40 move intermittently, as will be readily understood, so that for every complete revolution of a wheel the wheel of next higher denomination moves the space of one figure. Thus with four wheels all the numbers from "1" to
45 "9,999" may be printed.

In my invention I support all the type-wheels on a yielding support, so that they are capable of a bodily movement, and so connect them with an oscillating pawl-carrier, which
50 carries pawls engaging with the wheels, that such bodily movement of the wheels when

they are pressed against the paper moves the pawls so as to turn said wheels, the pawls and the wheels being so constructed and arranged relatively, as will be hereinafter explained, that each wheel will make a complete revolution before a pawl can engage and turn the next wheel. The wheels I make of annular form, and I form their inner edges with ratchets, with which the operating-pawls
55 engage, the pawls and ratchets being thus entirely inside the wheels, so that the wheels can be placed close together, which could not be done with the constructions heretofore employed. I provide retaining-pawls to keep
60 the wheels from moving backward. I also prefer to provide a retarding device for the oscillating shaft, which holds it from turning until the wheels are entirely relieved from pressure, since otherwise the first slight
65 relief might permit the type-wheels to begin to turn before they had left the paper, so that the impression would be blurred. Some of the wheels are required sometimes to print ciphers and sometimes not to print at all.
70 As both these requirements must occur at the same point in the revolution, I provide such wheels at this point with self-adjusting sections, each with the type for the cipher upon it, such sections being arranged to be
75 elevated or depressed in order to print or leave blank, as required.

The above are the main features of my invention, which, however, consists, also, in other novel devices and combinations of devices employed by me to effectively accomplish the general object above stated, as hereinafter set forth and claimed.

My invention is illustrated in the accompanying drawings, in which—

Figure 1 is a longitudinal section of a machine embodying my invention with the shaft in elevation; Fig. 2, a top view of the machine; Fig. 3, a section on line 3 3 of Fig. 2, looking from the left; Fig. 4, an end view
90 of the type-wheels, viewed from the left of Figs. 1 and 2; Fig. 5, a corresponding view looking from the right; Fig. 6, a separate enlarged view of the retarding device; Fig. 7, a section of the shaft and top view of the pawl;
95 Fig. 8, a separate view of the hub, principally to illustrate the retaining-pawls; Fig. 9, a view
100

of the inner surface of the units-wheel when one form of the adjustable cipher-section is employed; Fig. 10, a view of the opposed surface of the tens-wheel with such an adjustable cipher-section; Fig. 11, a view of the inner surface of the units-wheel for another form of cipher-section; Fig. 12, a view of the opposed surface of the tens-wheel. Fig. 13 shows another form of adjustable cipher-section. Fig. 14 shows in side elevation, and Fig. 15 in end view, a modified form for the operating-pawl. Fig. 16 is a section taken on the line 3^a 3^a of Fig. 2, looking from the left.

The machine is inclosed in a metal case A, open at the top for printing.

B is a stationary hub or cylinder, which carries the four type-wheels.

C is the units-wheel; D, the tens-wheel; E, the hundreds-wheel, and F the thousands-wheel. These wheels are all provided with raised or depressed type on their outer peripheries, the position of the printing characters on the type-wheels being indicated at Fig. 9, but being omitted from the other figures of the drawings for the sake of clearness. The wheels have concave meeting surfaces to diminish the friction between them.

The hub B is supported upon springs *a a* from the bottom of the case, which form the yielding support for the type-wheels. Through the hub B passes the operating-shaft G. On one side the hub has a recess *b*. The ends of the shaft G pass through supporting-plates *c c'*, which have slots to permit the vertical movement of the hub. The shaft G has a longitudinal slot *d*, in which the pawl-arm *e* is pivoted at *f*.

In Figs. 2 and 7 the pivoted arm *e* is shown as carrying a series of tongues *h, h', h²*, and *h³* of approximately the same depth, a spring *g* being employed to press said arm outward. In this construction the tongues *h* need not be of increasing length, as the same purpose is served by the pressure of the spring *g*, which forces the tongues outward to a greater extent as they near the free end of said arm *e*. In Fig. 14 a pawl-arm is shown with tongues of successively-increasing lengths. The tongues in both cases form pawls for engaging with the type-wheels.

The type-wheels are annular disks on the hub B. The wheels C, D, and E have each on its inner edge ten notches, nine of which *i i, &c.*, are of the same depth, while the tenth notch *i'* is deeper than the others; also, the deep notch *i'* of the units-wheel C is deeper than that of the tens-wheel D, the deep notch of the hundreds-wheel E being still less deep than the tens-wheel. The thousands-wheel F has no deep notch, but has ten shallow notches *i i*. From the thousands end of the hub B, at one side of the center thereof, a small pin *k* projects and enters a notch *l* in the end of a toothed segment *m*, pivoted on the inner side of the plate *c*. This engages with another toothed segment *n*, carried by a turning pin or spindle *o*, which extends

through the plate *c* and has a bearing in the side of the case A. Outside the plate *c* spindle *o* carries the long pivoted toothed segment *p*, which engages with another toothed segment *p'* on the shaft G. To the other end of shaft G, outside of plate *c'*, is attached a downwardly-extending arm or cam *q*, which bears against a curved spring *q'*, projecting from the case.

On the under side of the hub B is formed a recess, in which are pivoted four retaining-pawls *r r*, each of which engages with the notches *i i'* of one of the type-wheels to prevent backward movement of the wheels.

The tens and hundreds wheels are provided with adjustable sections for either printing a cipher or leaving a blank. One construction of this kind is shown in Figs. 9 and 10, the latter showing the tens-wheel and the former the opposing surface of the units-wheel. At the point where cipher or blank is to be printed the wheel D has a recess *s*, in which is pivoted a block *t* of trapezoidal form, on whose longest side is the type for the cipher. In the position shown the block prints the cipher; but when turned down into the recess the depth of the latter and the size of the block are such that the block does not reach the periphery of the wheel and will not print. In this position the block is held by a pivoted catch *u*. The opposing surface of wheel C has a continuous groove *v*, in which the catch *u* lies, and at one point a notch *v'* extends from the groove, so that the catch is tripped when it reaches such notch, and the block is turned to printing position by a small spring *w* at its pivot. The hundreds-wheel E has a similar adjustable section and the opposing side of the tens-wheel has a groove and notch like those of the units-wheel.

The thousands-wheel never has to print a cipher, and it therefore has type from "1" to "9" only, and has a depressed portion at *x*, Fig. 5, where the cipher would otherwise be.

The operation of the devices so far described is as follows: The machine is usually set up in a printer's form with type around it; but it may be used by itself where nothing but the number is to be printed. At the beginning of the operation the wheels are all adjusted so that the units-wheel presents the figure "1" for printing, the tens and hundreds wheels present their adjustable sections held down by the catches, and the thousands-wheel presents its depressed section *x*. Then when the wheels are pressed against the paper to print "1" the wheels and hub B are all forced down, and this movement is transmitted by pin *k*, toothed segments *m n*, spindle *o*, and toothed segments *p* and *p'* to shaft G, so as to turn such shaft and the pawl-arm *e* back into position to turn the type-wheels, and when the pressure is removed the springs move the wheels and hub up again, and this movement turns the shaft back, and the tongue *h³*, engaging with one of the notches *i*, moves the units-wheel the space of one type-

section, so as to present the figure "2" for printing. At this time, while the pawl is working in the shallow notches i , the units-wheel holds the pawl down out of engagement with the other wheels, so that only the units-wheel is turned. The other wheels present their depressed surfaces and do not print; but after the units-wheel prints "8" the revolution has brought its deep notch i' around, so that the pawl enters it on printing "9," and this releases the pawl enough to let it engage a notch i of the tens-wheel, so that as the units-wheel turns from "9" to "0" the tens-wheel is turned to "1" and the next printing is "10;" but after this the pawl enters the shallow notches of the units-wheel again, so that only the units-wheel turns and the tens-wheel prints "1" up to "19," when it is turned to "2" as the units-wheel goes to "0" to print "20." This continues until the tens-wheel turns around to "9," so that the pawl enters its deep notch i' and the pawl is further released to engage the hundreds-wheel for printing "100;" but after the units-wheel has printed "0" the first time the catch u on the tens-wheel, which has been turning in the groove v of the units-wheel, will have reached the notch v' , and the catch will thus be released and the block t will present its cipher-printing face, whereby when the hundreds-wheel prints "1" the tens and units wheels will each print "0" to make "100." After a complete revolution of the hundreds-wheel the deep notch of that wheel will permit the pawl to engage the thousands-wheel and turn it to print "1," the cipher-section of the hundreds-wheel having previously turned over in the manner just described to print "0." The gearing between the hub and the shaft, it will be seen, is such as to multiply the movement, so that only a small bodily movement of the type-wheels suffices to produce enough oscillating movement of the pawl-carrier to turn the wheels from one figure to another.

Fig. 2 shows, in dotted lines, the pawl at its farthest extended position resting in the deep notches of the wheels C D E and a shallow notch of the wheel F.

In Fig. 12 a different form of adjustable cipher-section is shown. The wheel, which is either the tens or hundreds wheel, has a recess y , which forms a flat surface for the cipher-section when raised, and also a cavity z large enough to hold the cipher-section z' , which is of the narrow elongated form shown, when it is depressed. The piece z' is held down by the catch y' , working in the groove v of the next wheel, Fig. 11, and is released and thrown up by the spring x' when the catch enters the notch v' .

Still another form is shown in Fig. 13. Here the block w' moves up and down vertically in the wheel, being supported by the toggle-arms u' , which in turn are supported by springs t' . From the pivot of the toggle-arms a pin s' extends up into a hole in block w' .

Block w' is held down by the catch y' , working in the groove and notch of the adjacent wheel, as before described, and when the catch is released the block rises and the arms u' enter notches r' in the wheel, so that the block is held up and has a firm support independent of the springs. Before the operation of the machine begins the block is set by passing a wire or pointed tool down into the hole in the block w' , so as to push the arms down out of the notches, and the block itself is then pushed down until it engages with the catch y' . It will be seen that in all these forms the adjustable section forms a part of the periphery of the wheel and does not require any additional space, and that it is released by tripping devices on the surface of the adjacent wheel.

Figs. 14 and 15 show a different form for the operating-pawl, whose object is to bring the pawl into line with its movement and so get an end-thrust of the pawl and avoid loss of motion. A rigid plate a^2 extends from the shaft, and at the end of this is pivoted on a pintle a^3 the curved pawl-arm b^2 , from which project the fingers engaging with the wheel. The pawl-arm is projected outward by the springs a^4 , carried by said pintle a^3 . It will be seen that the pawl thus pushes directly against the wheel, and there is no danger of its sliding across it, which might be possible with the form before described.

What I claim is—

1. In a numbering-machine, the combination of a stationary hub, revolving annular type-wheels mounted thereon, notched on their inner peripheries, a yielding or spring support for said hub, an oscillating shaft passing through said hub, pawls carried by said shaft engaging with the notches in said type-wheels, and gearing between said hub and said shaft, whereby the movement of the hub on its spring support moves the pawls to turn the type-wheels, substantially as set forth.

2. In a numbering-machine, the combination of a spring-supported hub, revolving annular type-wheels on said hub, pawls engaging with the inner edges of said type-wheels, and intermediate gearing, whereby the bodily movement of the wheels moves the pawls to turn said wheels, substantially as set forth.

3. In a numbering-machine, the combination of a spring-supported hub having a recess extending along its length, revolving type-wheels on said hub, an oscillating shaft passing through said hub, pawls carried by said shaft and working back and forth in said recess upon the inner edges of the type-wheels, and gearing between said hub and said shaft, whereby the movement of the hub on its spring-support moves the pawls to turn the type-wheels, substantially as set forth.

4. In a numbering-machine, the combination of the spring-supported hub, the type-wheels thereon, and the oscillating shaft carrying pawls engaging with said type-wheels, the pin on said hub, the toothed segment m ,

with which said pin engages, the toothed segment n , the counter-pin, the toothed segment p , and the toothed segment p' on said shaft, substantially as set forth.

- 5 5. In a numbering-machine, the combination, with the revolving type-wheels capable of bodily movement and gearing converting this bodily movement into the turning movement, of a retarding device for retarding the turning movement, substantially as set forth.
- 10 6. In a numbering-machine, the combination, with the revolving type-wheels capable of bodily movement, of the oscillating pawl-carrier having pawls engaging with said wheels, intermediate gearing for converting the bodily movement into a turning movement, and a spring bearing on the pawl-carrier and preventing its movement when the wheels are depressed, substantially as set forth.
- 15 7. In a numbering-machine, the combination of the spring-supported hub, the revolving type-wheels thereon, the oscillating shaft passing through said hub, the pawls on said shaft engaging with the wheels, the gearing between the hub and the shaft, the cam or projection on said shaft, and the stationary spring bearing against it, substantially as set forth.
- 20 8. In a numbering-machine, the combination, with a type-wheel, of an adjustable section adapted to be depressed or to be elevated to print a cipher, a spring for elevating said section, and a device affected by the adjacent type-wheel controlling the position of said block, substantially as set forth.
- 25 9. In a numbering-machine, the combination, with a type-wheel, of an adjustable section adapted to be depressed or to be elevated to print a cipher, a catch holding said section in its depressed position, a tripping device on the adjacent type-wheel for releasing the catch at the proper point in the revolution of the wheel, and a spring for elevating said section, substantially as set forth.
- 30 10. In a numbering-machine, the combination, with a type-wheel having a recess in its periphery, of a turning block in said recess whose dimensions are such that it either presents a printing-surface or a depression, according to its position, a spring for turning said block, a catch holding said block in its depressed position, and a tripping device for said catch on the adjacent type-wheel, substantially as set forth.

tion adapted to be depressed or to be elevated to print a cipher, a spring for elevating said section, and a device affected by the adjacent type-wheel controlling the position of said block, substantially as set forth.

9. In a numbering-machine, the combination, with a type-wheel, of an adjustable section adapted to be depressed or to be elevated to print a cipher, a catch holding said section in its depressed position, a tripping device on the adjacent type-wheel for releasing the catch at the proper point in the revolution of the wheel, and a spring for elevating said section, substantially as set forth.

10. In a numbering-machine, the combination, with a type-wheel having a recess in its periphery, of a turning block in said recess whose dimensions are such that it either presents a printing-surface or a depression, according to its position, a spring for turning said block, a catch holding said block in its depressed position, and a tripping device for said catch on the adjacent type-wheel, substantially as set forth.

This specification signed and witnessed this 12th day of November, 1887.

EDWIN G. BATES.

Witnesses:

WILLIAM PELZER,
E. C. ROWLAND.

NEXT ITEM

(No Model.)

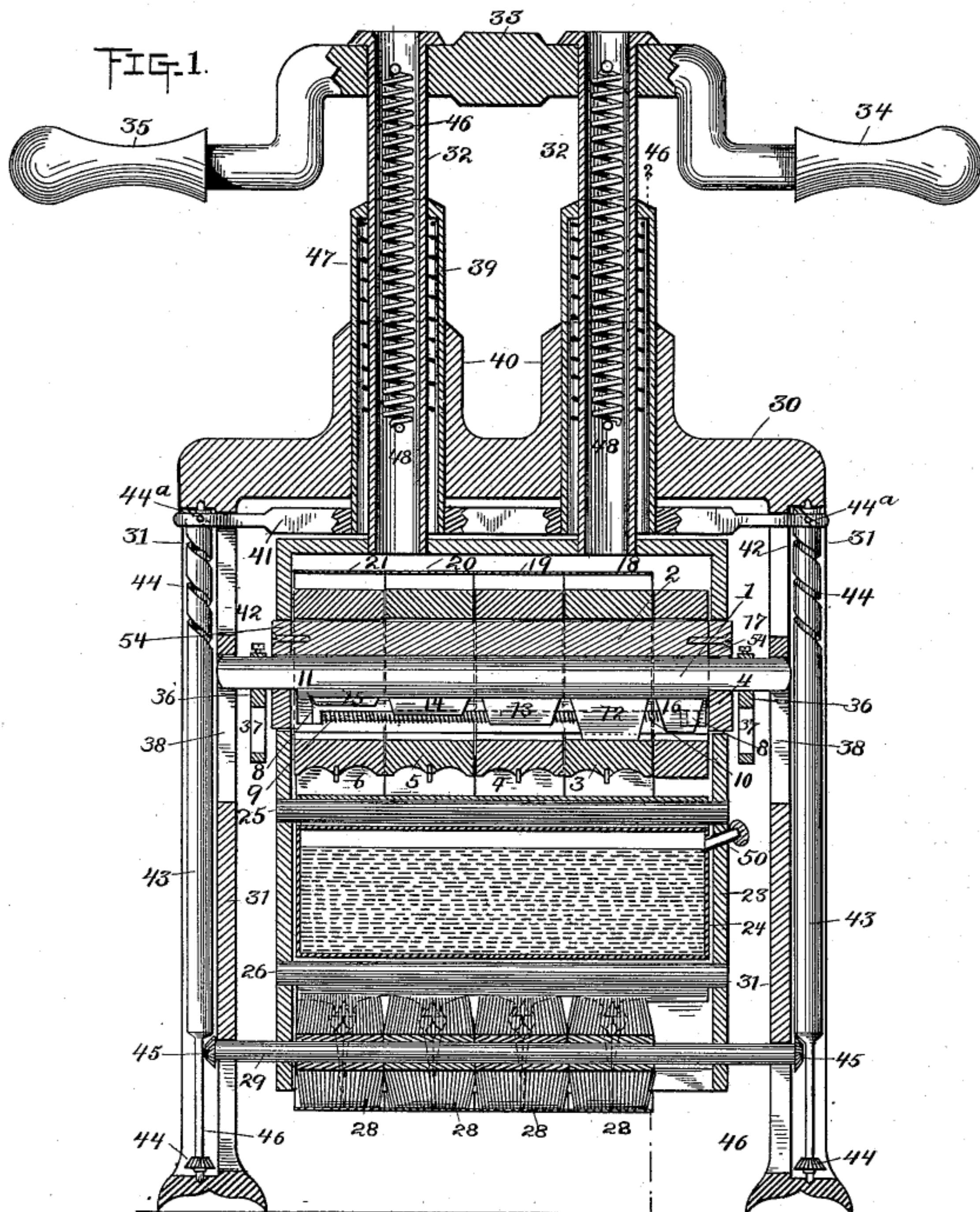
2 Sheets—Sheet 1.

E. G. BATES.

MACHINE FOR PRINTING STENCIL CHARACTERS CONSECUTIVELY.

No. 486,964.

Patented Nov. 29, 1892.



Witnesses
E. Howland
William Rizer.

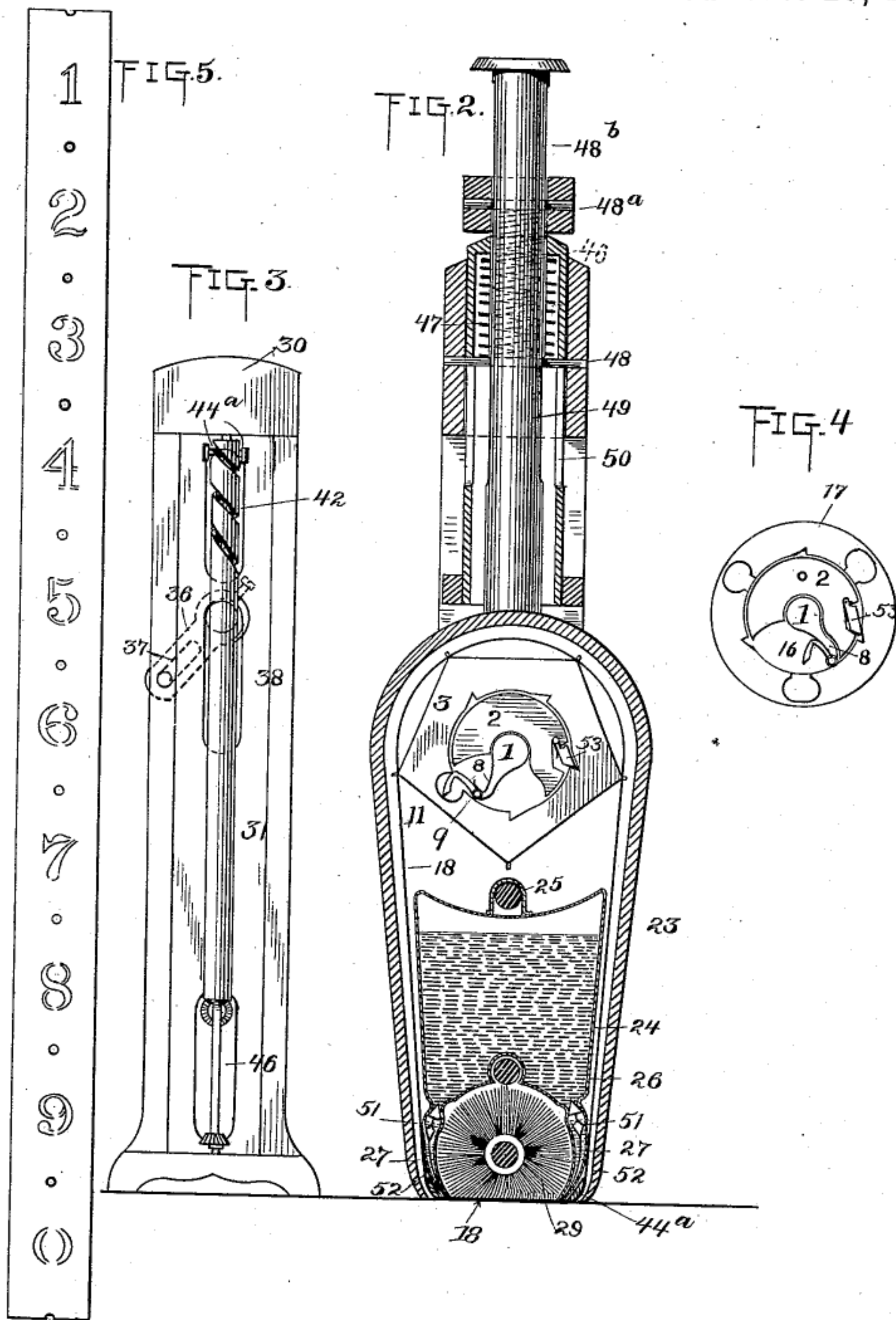
Inventor
Edwin G. Bates
By his Attorneys
J. M. [Signature]

E. G. BATES.

MACHINE FOR PRINTING STENCIL CHARACTERS CONSECUTIVELY.

No. 486,964.

Patented Nov. 29, 1892.



Witnesses
E. A. Howland
William Rizer

Inventor
Edwin G. Bates
By his Attorneys
Jas. H. [Signature]

UNITED STATES PATENT OFFICE.

EDWIN G. BATES, OF NEW YORK, N. Y., ASSIGNOR TO THE BATES MANUFACTURING COMPANY, OF NEW YORK.

MACHINE FOR PRINTING STENCIL CHARACTERS CONSECUTIVELY.

SPECIFICATION forming part of Letters Patent No. 486,964, dated November 29, 1892.

Application filed June 3, 1889. Serial No. 312,959. (No model.)

To all whom it may concern:

Be it known that I, EDWIN G. BATES, a citizen of the United States, residing at New York city, in the county and State of New York, have invented a Machine for Printing Stencil Characters Consecutively, of which the following is a specification.

The object of my invention is to provide improved apparatus with which to number packing-boxes, bales, &c., consecutively.

My invention consists, first, in the use of a number of endless tapes having the numbers to be printed stencil-cut thereon and mechanism for feeding the same to an inking apparatus to apply the ink to print consecutively; second, in including in the space inclosed by the endless stencil-tapes the inking apparatus and the mechanism for feeding said stencil-tapes; third, in actuating the feeding mechanism for the stencil-tapes by the movement which brings them into the printing position; fourth, in the mechanism for operating the inking-brushes after the stencil-tapes have been brought into the printing position; fifth, in the mechanism for supplying a determined quantity of ink to each printing character when in the printing position and shutting off the supply when the printing character is out of the printing position; sixth, in the adaptation of mechanism for feeding the stencil-tapes to enable the inking apparatus to be arranged within the space inclosed by said tapes.

My invention consists, further, in the various novel devices and combinations of devices hereinafter described, and particularly pointed out in the claims.

In the accompanying drawings, forming a part of this specification, Figure 1 is a central transverse sectional elevation of a stencil-machine embodying my invention with the parts in position to commence printing. Fig. 2 is a cross-section taken on the plane of the line 2 2, Fig. 1, with the parts in the printing position. Fig. 3 represents one of the legs of the frame viewed from the outside. Fig. 4 is an end view of the feeding mechanism, and Fig. 5 is a plan of one of the stencil-tapes developed.

In existing machines for numbering consecutively the numbers are formed on what are

known as "type-wheels," the manner of feeding which to print consecutively is well understood. In the patent granted to F. W. Wicht, No. 391,289, dated October 16, 1888, the feeding mechanism is arranged outside of the type-wheels and in my application, Serial No. 428,780, filed April 12, 1892, is shown a feeding mechanism arranged within the type-wheels.

My present machine, being designed for the printing upon packing-boxes, bales, &c., where a type-wheel would be difficult, if not impossible, to use, employs in lieu of type stencil-cut numbers, the mechanism for feeding which to print consecutively may be on the principle of any of the well-known forms.

In the machine shown in the accompanying drawings, illustrating my invention, I have shown feeding mechanism of the same general character as that shown in my application above referred to, modified to meet the requirements of stencil-printing and to economize space. 1 is the rock-shaft of this feeding mechanism, upon which is mounted a hub 2, partially cut away, as shown in Fig. 2, to permit of the oscillations of shaft 1. Mounted to rotate upon the sleeve 2 are a number of annular sprocket-wheels 3 4 5 6, each of which is pentagonal in form on its outer periphery, and has five pins, one pin being located at the apex of each angle of the wheel. On its inner periphery each of these wheels has formed upon it four shallow notches and one deep notch. The rock-shaft has depending lugs 8 8, which carry a shaft 9, a coiled spring 10, and pawl 11. The tendency of this spring is to press the pawl downward at all times. The pawl carries teeth 12, 13, 14, and 15, adapted to engage with the notches cut on the inner periphery of the sprocket-wheels, and also an auxiliary tooth 16, for a purpose hereinafter to be explained. As will be seen, the tooth 12 of the pawl is longer than any of the other teeth, and is designed to operate the mechanism to feed the unit printing characters. The tooth 13 is next in size, and is designed to feed the tens printing characters. The tooth 14 is next in size, and is designed to feed the hundreds printing characters. The tooth 15 is the smallest of the teeth on the pawl, and is designed to feed the thousands-printing characters, thousands being

the limit of the machine shown in the drawings.

As is usual in consecutive-printing machines, the rate of movement of the tens printing characters with relation to the unit printing characters is as ten is to one, of the hundreds printing characters to the unit characters as one hundred is to one, and so on progressively. This movement is accomplished in existing numbering-machines by an arrangement of stepped teeth on a pawl engaging with notches on the type-wheels, the tooth of the pawl opposite the unit-wheel being longer than the other teeth of the pawl and serving to hold those teeth out of engagement with the notches opposite them, respectively, except when the unit-tooth drops into the deep notch of the unit-wheel, when the tens-tooth, being the next longest, will be permitted to drop into a notch of the tens-wheel and feed that wheel one step, and so on to feed the other type-wheels to print consecutively. The feed-wheels of my machine, however, being necessarily made small are provided with only five notches cut upon them. It is necessary, therefore, to provide a regulator to prevent the wheels for feeding higher denominations than units from being moved except every alternate time when a tooth of the pawl is in engagement with a deep notch of the wheel next below in denomination. This is accomplished by means of the auxiliary tooth 16 on the pawl which engages with an annular wheel 17, which has cut upon its inner periphery six notches alternately deep and shallow, and which is arranged on the hub 2, so that the tooth 16 of the pawl engages one of its shallow notches on the completion of the first revolution of the unit feed-wheel, and on the completion of the second revolution of said feed-wheel engages a deep notch. The tooth 16 of the wheel 17 being deeper than the tooth 13 of the tens feed-wheel will prevent the latter tooth from engaging with a notch on the tens feed-wheel until the tooth 16 drops into a deep notch on the wheel 17. 18, 19, 20, and 21 are endless tapes, which are preferably of sheet metal, and upon each of which is stencil-cut the numbers from "0" to "9" in the manner usual for forming stencil characters. These numbers are arranged at equal distances apart, and between each two numbers is a hole 22, with which the pins on the sprocket-wheels are designed to engage. The length of each of these tapes is twice the length of the perimeter of any of the sprocket-wheels, and as there are ten holes in the tapes and only five pins in the sprocket-wheels it is obvious that the sprocket-wheels must revolve twice to completely feed the tape.

23 is a casing within which, besides the feeding mechanism and stencil-tapes, is located the inking apparatus.

24 is the reservoir of the inking apparatus supported in the casing upon cross-shafts 25 26 and having ducts 27, leading from the bottom of the reservoir downward and par-

tially surrounding ink-brushes 28, which are mounted upon the shaft 29.

The entire inking apparatus is located within the stencil-cut tapes opposite the feed-wheels and serves to maintain the said tapes in proper position.

The rock-shaft 1 is operated in the following manner: 30 is the top plate of a stationary frame which has the side standards 31. Working through the top plate of this stationary frame are two hollow followers 32, with which, at the top, engages the cross-bar 33, having handles 34 and 35. At the bottom these followers carry the casing 23. The ends of the rock-shaft 1 project beyond the sides of the casing 23 and have at each end a piece 36, secured thereto by a set-screw, as shown. This piece 36 has a straight slot 37, into which projects a pin from the standard 31. On each of the standards 31 is a straight slot 38, into which the ends of the rock-shaft 1 project. Now as the plungers 32 are pressed downward by the handles 34 and 35 the frame 23, and consequently the rock shaft 1, will also be carried downward. During this downward movement the pin in engagement with the slot on the piece 36 will rock the rock-shaft in one direction. On the upward movement of the casing this pin will rock the rock-shaft in the opposite direction. The downward movement of the casing 23 is limited by the cross-bar 33 striking the top of other followers 39, within which the followers 31 slide. A further downward movement of the cross-bar 33 will push the followers 39 before them, the limit of the downward movement of the followers 39 being determined by the contact of the elevations 40 of the plate 30 and the cross-bar. The object of the followers 39 is to actuate the ink-brushes.

41 is a cross-bar carried at the bottom of the plungers 39, forked at each end and projecting at each end through a slot 42 in each of the standards 31, so as to surround a spindle 43, having a worm 44 cut upon it, with which engages an inwardly-projecting pin 44^a on the forked portion of the cross-bar 41. The bottom of this spindle 43 is cut away, as shown, and carries a bevel-wheel 44. The ends of the shaft 29 on which the ink-brushes are mounted carry bevel-gears 45, the shaft projecting through a slot 46 in the standards. Now as the followers 39 are pushed downward the cross-bar 41 will be carried with them, and the pins of the cross-bar, working in worms 44 of the spindles 43, will cause the said spindles to be rotated, and the bevel-wheels 45 of the shaft 29 of the ink-brushes having been brought into engagement with the bevel-wheels 44 of the spindle 43 by the downward movement of the follower 32, carrying the casing 23, the ink-brushes will be rotated by the rotary movement of the spindle.

To properly time the movements of the various parts so that the number to be printed will be brought into the printing position before the ink-brushes are caused to revolve to

spread the ink, the spring 46 is arranged within each of the plungers 32 and the spring 47 is arranged within each of the plungers 39, the latter springs being stiffer than the former and each set of springs acting at one end against the same point, which is a pin 48, passing through both the followers, the followers being formed with the slots 49 and 50 to permit the pin to work. Now the spring 47 being stiffer than the spring 46, the latter may be compressed until the cross-bar strikes the head of the plunger 39, when that plunger will be forced down, compressing the spring 47. The followers 32 being connected to the cross-head 33 by pins 48^a and slots 48^b, the followers 32 will remain stationary while the followers 39 are being forced down. On the return movement the spring 47, being the stiffer, will force the plunger 39 upward first, thereby reversing the rotation of the brush and insuring the thorough spreading of the ink over the stencil. The spring 46 will then force its plunger and the casing upward into the printing position. (Shown in Fig. 1.)

The ink-reservoir is filled from the outside of the casing through the tube 50, closed by a suitable cap. The quantity of ink contained within the ducts is governed by means of double-seated valves 51, having the valve-stems 52. When the ink-reservoir is in its highest position, the upper valves are withdrawn from their seats by gravity and a quantity of ink admitted to the ducts; but when the ink-reservoir is in the downward position the stems of the valves will have been forced upward by contact with the surface to be printed upon and the valves closed, permitting, however, the quantity of ink in the ducts to run out on the surface to be printed and to be brushed thereon by the ink-brushes.

53 are detents for preventing backward movement of the feed-wheels, and 54 are caps for preventing dust, &c., from getting into the casing 23.

What I claim is—

1. In a numbering-machine, the combination, with a series of endless tapes having numerals cut therein, of mechanism adapted to move said tapes along one after another, whereby the stencil-openings are brought into position to print numbers consecutively, and an inking apparatus located within said tapes, substantially as set forth.

2. In a numbering-machine, the combination of the reciprocating casing, endless stencil-cut tapes mounted thereon, feeding mechanism located within said tapes, operated by the reciprocation of the casing, and an inking apparatus also located within said tapes, substantially as set forth.

3. In a stenciling-machine, the combination, with a series of endless stencil-cut tapes, of feed-wheels located within said tapes, adapted to move said tapes to print consecutively, and an inking apparatus also located within said tapes opposite said feed-wheels and serving

to maintain said tapes in proper position, substantially as set forth.

4. In a stenciling-machine, the combination of a stencil-cut endless tape, feeding mechanism for moving it, and a pivoted brush located within the tape for inking it, substantially as set forth.

5. In a numbering-machine, the combination, with a reciprocating casing and endless stencil-cut tapes mounted thereon, of mechanism located within said tapes, operated by the reciprocation of the casing to move said tapes to print consecutively, and means for applying ink to the stencil-tapes on the inner surface and in line with the stencil-openings which are in printing position, substantially as set forth.

6. In a numbering-machine, the combination of a series of endless stencil-cut tapes, a series of feed-wheels engaging with said tapes, each wheel adapted to make two revolutions to effect a complete revolution of the tape fed by it and having four shallow notches and one deep notch, a pawl having stepped teeth adapted to engage with said notches, and a regulator adapted to prevent a tooth of the pawl dropping into the deep notch of its wheel, except on every alternate revolution of the wheel next below in denomination, substantially as set forth.

7. In a numbering-machine, the combination, with a stationary frame and movable casing, of notched feed-wheels, a toothed shaft upon which said feed-wheels are mounted, a straight slot in said stationary frame, in which an end of said shaft slides, and a piece 36, provided with slot 37, mounted on said shaft, engaging with a pin on the stationary frame, substantially as set forth.

8. In a numbering-machine, the combination, with a reciprocating casing and inking apparatus contained thereon, of a stationary frame, means for reciprocating said casing with relation to said frame, a gear on a spindle supported in said stationary frame, a gear on the shaft of the ink-brushes of the inking apparatus, said gears being adapted to be brought into engagement by the downward movement of said casing, and means for rotating said spindle, substantially as set forth.

9. In a numbering-machine, the combination, with a series of endless stencil-cut tapes, of a series of feed-wheels for said tapes, each adapted to make two revolutions for each revolution of the tape fed by it, means for moving said wheels to feed the tapes to print consecutively, comprising four shallow and one deep notch cut on the inner periphery of said feed-wheels, a rock-shaft, a pawl carried by said rock-shaft, having stepped teeth and one auxiliary tooth of greater length than any tooth but the units-tooth, and an annular wheel having alternate deep and shallow notches, with which said auxiliary tooth engages, substantially as set forth.

10. In a consecutive-numbering machine,

the combination, with endless moving tapes, of an inking apparatus comprising an ink-reservoir, ink-ducts, valves controlling the supply of ink from the reservoir to the ducts, and ink-brushes for applying the ink, substantially as set forth.

11. In a consecutive-numbering machine, an inking apparatus comprising an ink-reservoir, ink-ducts, double-seated valves located within said ink-ducts, and ink-brushes for applying the ink, substantially as set forth.

12. In a consecutive-numbering machine, an inking apparatus comprising an ink-reservoir, ink-ducts, and double-seated valves adapted to operate by gravity to close the bottom valve and by pressure of the printing-

surface on the valve-stem to close the upper valve, substantially as set forth.

13. In a numbering or stenciling machine, the combination of a reciprocating body or casing, endless stencil-cut tapes mounted thereon, feeding mechanism located within said tapes, operated by the reciprocation of the body or casing, and a single-inking apparatus within and common to all of said stencil-tapes, substantially as set forth.

This specification signed and witnessed this 29th day of May, 1889.

EDWIN G. BATES.

Witnesses:

D. H. DRISCOLL,
WILLIAM PELZER.

NEXT ITEM

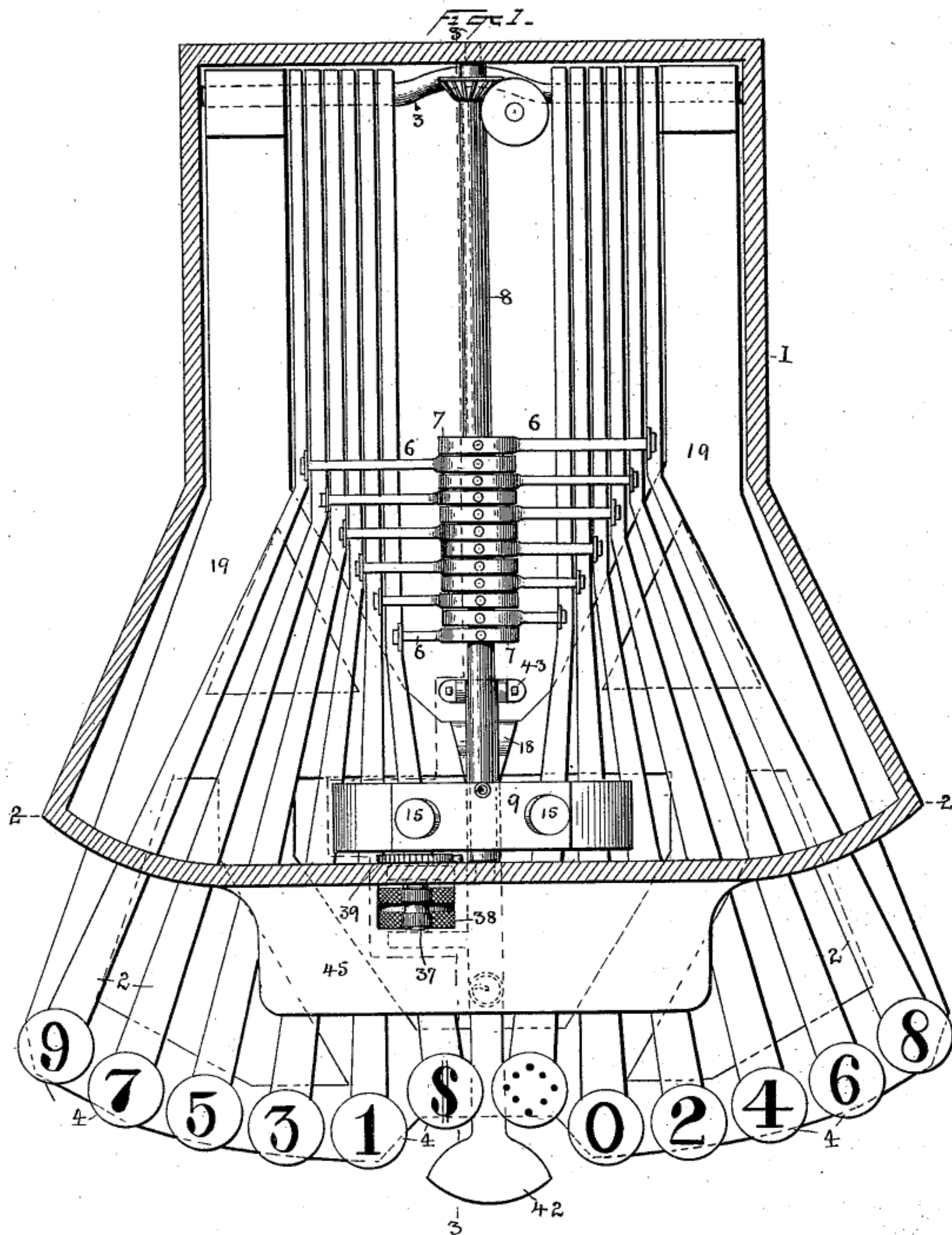
(No Model.)

3 Sheets—Sheet 1.

E. G. BATES.
CHECK PUNCH.

No. 488,052.

Patented Dec. 13, 1892.



Witnesses
Norris A. Clark
W. H. [Signature]

Inventor
Edwin G. Bates
By his Attorneys
[Signature]

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.)

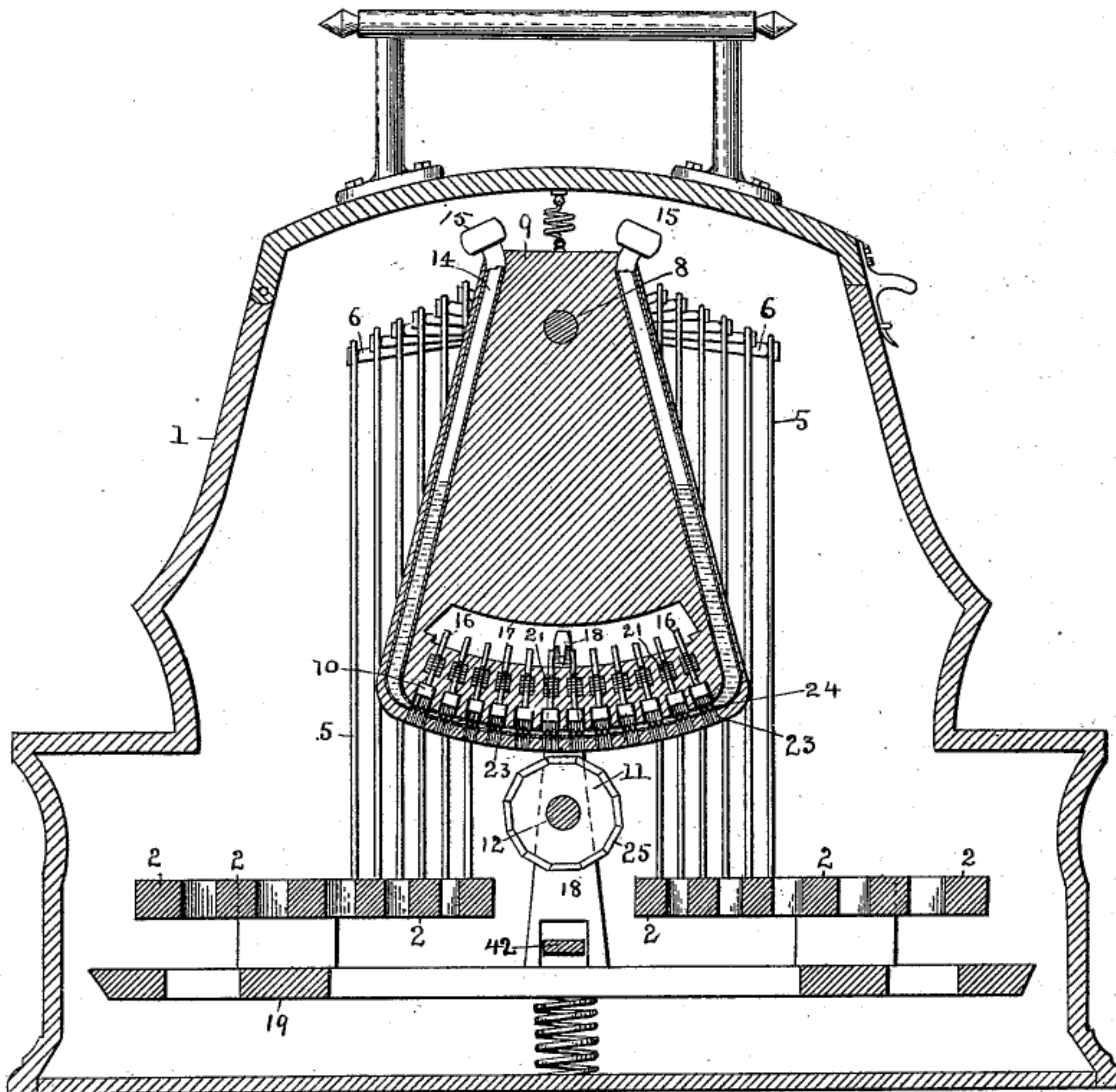
3 Sheets—Sheet 2.

E. G. BATES.
CHECK PUNCH.

No. 488,052.

Patented Dec. 13, 1892.

Fig. 2.



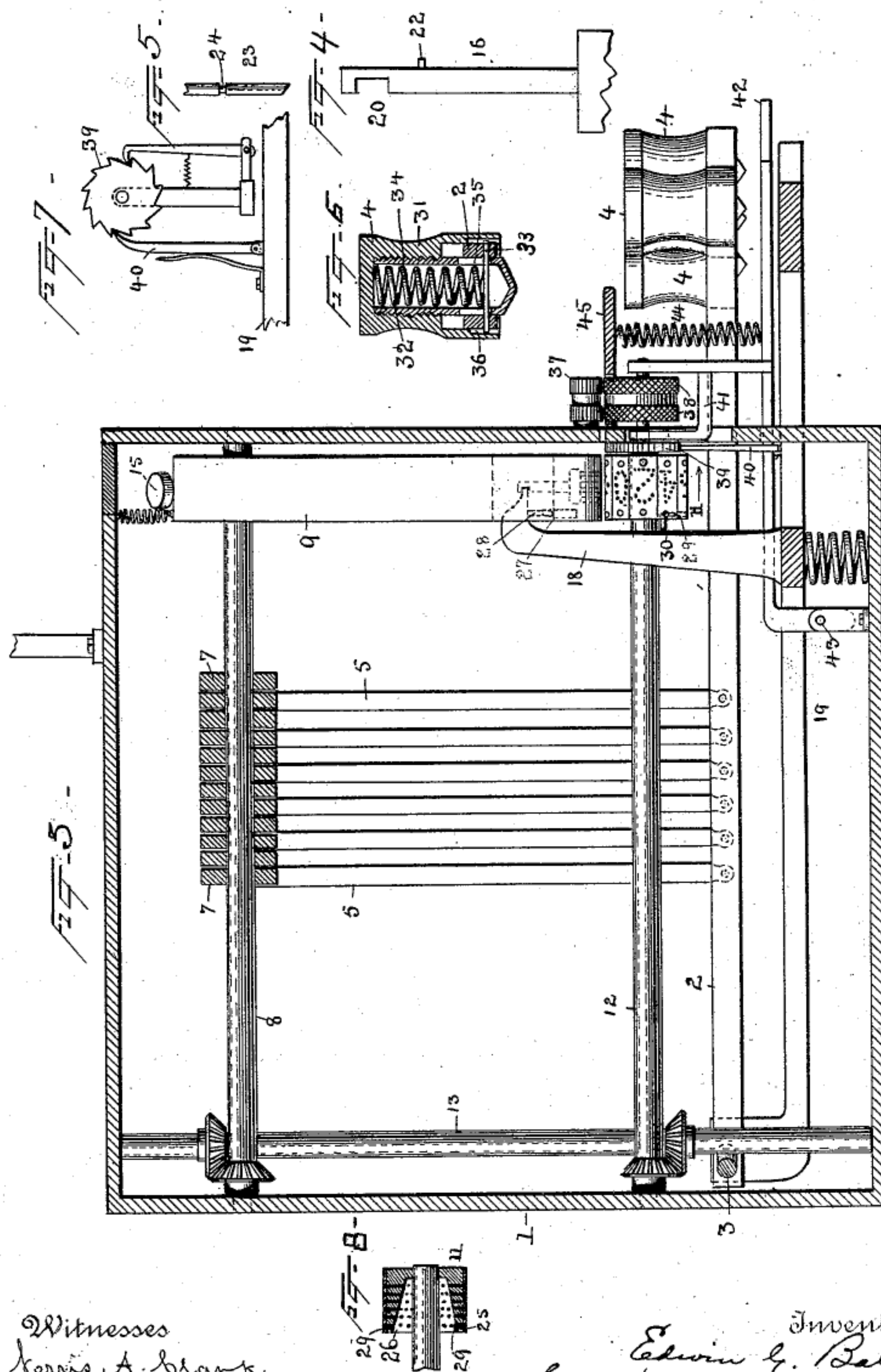
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By his Attorney
J. H. [Signature]

3 Sheets—Sheet 3.

No. 488,052.

Patented Dec. 13, 1892.



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By his Attorneys
Jas. H. [Signature]

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

EDWIN G. BATES, OF NEW YORK, N. Y., ASSIGNOR TO THE BATES MANUFACTURING COMPANY, OF NEW YORK.

CHECK-PUNCH.

SPECIFICATION forming part of Letters Patent No. 488,052, dated December 13, 1892.

Application filed September 15, 1890. Serial No. 365,087. (No model.)

To all whom it may concern:

Be it known that I, EDWIN G. BATES, a citizen of the United States, residing at New York city, in the county and State of New York, have
5 invented a certain new and useful Improvement in Check-Punches, of which the following is a specification.

My invention has for its object the more adequate protection of checks, drafts, &c.,
10 from alteration.

It consists, essentially, in mechanism for forming the figures by perforations through the paper of the check and inking the fibers left exposed at the edges of the perforations
15 by the same operation.

My invention also consists in the arrangement and combination of mechanism herein-after described, and specifically pointed out in the claims.

20 In the accompanying drawings, illustrating my invention, Figure 1 is a top plan view of an apparatus embodying my invention, with the top of the inclosing frame removed. Fig. 2 is a vertical transverse section taken on the
25 plane of the line 22, Fig. 1. Fig. 3 is a vertical longitudinal section taken on the plane of the irregular broken line 3 3, Fig. 1. Fig. 4 is a detail view in side elevation of the shank of a perforating and inking punch. Fig. 5 is an
30 enlarged view of a portion near the point of one of the pins of the perforating printing-punches. Fig. 6 is an enlarged sectional elevation of one of the keys of the key-levers. Fig. 7 is an enlarged detail view of a portion
35 of the mechanism for feeding the check, and Fig. 8 is a sectional elevation of the bed for the perforating printing-punches.

In the drawings, 1 is the frame, in which is inclosed the main operative portions of the
40 machine. 2 are the key-levers, of which there may be any required number. In the drawings I have shown twelve—one for the cipher, each of the numerals, the dollar-mark, and for an arbitrary sign used on checks and drafts
45 to indicate the end of a numerical expression. These key-levers are fulcrumed to a rod 3, supported in opposite sides of frame 1. At its free end each key-lever is provided with a key 4, hereinafter more particularly de-

scribed, on which is inscribed the character 50 to be recorded by its depression. Each key-lever is connected through the connecting-rods 5 6 and collar 7 with the shaft 8, upon which is carried a swinging pendulum or carrier-case 9. This carrier-case oscillates in pro- 55 portion to the rotation of the shaft 8, by which it is carried, and by its oscillation brings the perforating printing-punches 10 into operative printing position with relation to the printing-bed 11. The printing-bed is carried 60 by a shaft 12, which is connected through miter-gearing and spindle 13 in such manner that motion imparted to shaft 8 will be transmitted to shaft 12 and in the same direction, whereby the printing-punch carrier and print- 65 ing-bed will always be maintained in a certain definite relationship. The carrier-case 9 is provided with an ink-duct or supply-reservoir 14, closed by suitable caps 15, removable for the purpose of filling. 70

The perforating printing-punches 10, hereinbefore referred to, are so arranged in carrier 9 that their shanks 16 project into an arc-shaped slot or recess 17, in position to be engaged by a piece 18, carried by a lever- 75 plate 19, fulcrumed on rod 3. A point on piece 18, acting as a finger, enters a slot on the back of shank 16, and by this means the lever-plate and the punches are operatively connected—that is, are so connected that 80 when said piece is carried downward by the depression of said lever-plate the perforating printing-punch, which is in printing or punching position, is carried with it.

Suitable ways are formed in the case 9 for 85 the reciprocation of the punches, their outward motion being effected, as above stated, by the downward motion of the piece 18 and their inward or return motion by the spring 21, held between the pin 22 on the shank of 90 the punch and a portion of the carrier-case. The head of the punch carries a number of pins 23, arranged to form the desired character, each of the pins preferably being provided with a circular channel 24, cut in such 95 position that when the punch is held in the normal position by the force of the spring 21, the channel 24 is within the ink-duct 14 and

the enlarged portion of the pin both above and below the channel 24 plugs the ways or passages so that no ink can escape, it being understood that the pins 23 fit closely in their passages, a packing being used, if desired. The printing-bed 11 is practically the female member of the punch, it being provided with a series of plates 25, one for each perforating printing-punch, the plates being arranged in the same order as the punches, and each plate containing holes forming the same character as the punch opposite to it in relationship. The printing-bed is preferably recessed, as shown in Fig. 8, and the various holes extend into the recess, so that the dots of paper punched out by the punches are forced through the female die and then through the recess 26. To insure a proper registry between the perforating printing-punches and their respective sections of printing-bed, a series of holes 27 is formed in the lower surface of the are slot 17 in the case 9, one hole 27 being located opposite the shank of each punch, into which holes 27 a pin 28, depending from the piece 18, is adapted to enter. A series of similar holes 29 is provided in the interior of the recess 26 of the printing-bed, one hole being opposite each plate. Into these holes a pin 30, carried by piece 18, is adapted to enter. It is obvious that if the pins 28 or 30 fail to register with the holes provided for them there will be no descent of the hook 18 possible until a readjustment is effected.

The keys 4 are provided, as shown in Fig. 6, with an outside shell 31. Within this shell is contained a spring 32, which presses at one end against the cross-pin 33, carried by the mortised end of the key-lever 2, and at the other end against the top of the shell 31. Within the said shell a barrel 34 is located, which incloses the spring 32, and is provided with a slot 35, through which the pin 33 passes, the said shell 31 being provided with a recess 36 to permit its downward motion by the ends of the pin. By this arrangement of parts the key-levers can be depressed until they meet a stop, which may be the bottom of the slot in the frame in which they move, while the key itself has a further downward motion to set in motion other parts.

The feed is imparted to the check or draft through pressure-roller 37 and feed-roller 38, the latter being carried on the same shaft as ratchet 39, which is operated through the pawl 40 on the depression of the lever-plate 19. Both the feed-wheel 38 and ratchet 39 are carried by a U-shaped standard 41 on the lever 42, the latter being pivoted in a post 43, rising from the bottom plate of the frame, a suitable spring 44 being connected with the lever 42 and the under side of the platform 45.

The operation of the machine is as follows: A check or draft on the platform 45 is inserted between the carrier 9 and printing-bed 11, first pressing the lever 42, whereby the feed-wheel 38 and ratchet 39 are lowered to

permit such insertion through the horizontal slot in the front plate of the frame. Next, one of the keys 4 is operated, whereby the shaft 8 is partially rotated and swings the case 9, a character corresponding to the character called for by the key being thus brought into printing position. The motion of shaft 8 is transmitted through the beveled gears and shaft 13 to shaft 12, which carries the printing-bed 11, so that the printing-bed receives a movement corresponding to the movement of the carrier-case 9. It is obvious that when the perforating printing-punches carried by case 9 are arranged in the same order as the holes forming the several characters of the printing-bed and both arranged so that the holes of the printing-bed forming a given character will be opposite the pins of the punch forming the same character, a simultaneous movement of the printing bed and carrier in the same degree will always secure the desired relationship of printing-punch and printing-bed. By reason of the construction of key 4 the key-lever 2 is depressed until it is stopped by coming to the end of its slot in the front plate of the frame of the machine. Continued pressure, however, of the key 4 projects the barrel 34 below its normal position into contact with the lever-plate 19, and the lever-plate is in turn depressed and depresses the piece 18, which has had brought into operative relationship with it the shank 16 of the perforating printing-punches through the swinging of the carrier into printing position. The downward movement of the perforating printing-punch thus effected perforates the paper of the check or draft and at the same time carries a quantity of ink in the channel 24 of the pins sufficient to ink the exposed fibers of the paper. Preferably a thick or semi-fluid ink is employed. When the lever-plate 19 is permitted to rise, by removing the finger from key 4 ratchet 39 and feed-wheel 38 are rotated through the pawl 40, and the check is thereby fed a distance corresponding to one space.

What I claim is—

1. In a check-protector, the combination of a perforating printing-punch provided with a series of pins arranged in the form of a character and an inking device permanently located in the path of said punch and traversed by the pins thereof, said pins being normally—that is, when the apparatus is not in use, in contact with the inking device and above the printing-surface, whereby as the pins are moved forward to perforate the paper they ink the same around the perforations, substantially as described.

2. In a check-protector of the character indicated, the combination of a perforating-punch arranged to form the desired character, a printing-bed, and an inking device above the printing-bed for applying ink to the punch above the paper to be perforated, whereby as the punch moves forward it will

be inked and will ink the paper, substantially as described.

3. In a check-protector, the combination of a perforating printing-punch provided with a series of pins arranged in the form of a character, an inking device permanently located in the path of said punch and traversed by the pins thereof, whereby the latter are inked, and a printing-bed provided with a series of holes adapted to register with the said pins, substantially as set forth.

4. In a check-protector, the combination, with a perforating printing-punch, inking device, and printing-bed, of a lever adapted to be depressed by the depression of the printing-key, and a piece, as 18, between said punch and lever adapted to effect the outward movement of the punch, substantially as set forth.

5. In a check-protector, the combination, with the perforating-punch carrier, of perforating-punches carried thereby, a printing-bed below said carrier, gearing connecting said carrier and printing-bed, a key-lever mechanism connecting said punches and key-lever, and connections between said key-lever and gearing, whereby the movement of the carrier and printing-bed is effected synchronously by movement of the key-lever, substantially as set forth.

6. In a check-protector, the combination, with a pendulum punch-carrier case, of perforating-punches carried thereby, a rotary printing-bed, gearing connecting said carrier and bed, a key-lever, mechanism connecting said punches and key-lever, and connections between said key-lever and gearing, whereby the movement of the carrier and the bed is effected synchronously by movement of the key-lever, substantially as set forth.

7. In a check-protector, the combination, with the punch-carrier, perforating-punches, printing-bed, gearing connecting said carrier and bed, and a key-lever, and connections between said key-lever and gearing, whereby the movement of the carrier and bed is effected synchronously by the movement of the key-lever, of mechanism operated by the key-lever for depressing the perforating-punches after the carrier and bed have been brought into printing position, substantially as set forth.

8. In a check-protector, the combination, with the perforating-punch carrier, printing-bed, gearing connecting said carrier and bed, and a key-lever, and connections between said key-lever and said gearing, whereby the movement of the carrier and bed is effected synchronously by the movement of the key-lever, of a plate-lever in the path of said key-lever, a connection between the perforating-punch and the plate-lever, and means carried by the key-lever for depressing said plate-lever after the printing-punch has been brought into printing position, substantially as set forth.

9. In a check-protector, the combination of a case 9, carrying perforating-punches

10, a printing-bed 11, a shaft 8, on which said case 9 is mounted, a shaft 12, on which said printing-bed 11 is mounted, gearing between said shafts, a key-lever 2, and connecting-rods 5 6, connecting said key-lever with shaft 8, whereby on the depression of the key-lever said case and printing-bed are moved synchronously, substantially as set forth.

10. In a check-protector, the combination of a case 9, carrying perforating-punches 10, a printing-bed 11, a shaft 8, on which said case 9 is mounted, a shaft 12, on which said printing-bed 11 is mounted, gearing between said shafts, a key-lever 2, connecting-rods 5 6, connecting said key-lever with shaft 8, a key 4, adapted to project beyond the range of movement of the key-lever 2, a lever 19, adapted to be moved by the act of projecting said key beyond the range of movement of the key-lever, and a piece 18, carried by said lever 19, adapted to engage with the perforating-punches, whereby by the continued depression of the key the printing-punches and printing-bed are synchronously moved into position and the perforating-punches operated, substantially as set forth.

11. The combination, in a check-protector, of a perforating-punch, a pivoted lever, an upwardly-projecting hook or piece for depressing said perforating-punch, said punch being operatively connected to said lever, a printing-bed, a ratchet supported independently of said lever and printing-bed, and a pawl carried by said lever, substantially as set forth.

12. In a check-protector, a perforating printing-punch having a series of pins forming the character, one or more of said pins being provided with a channel adapted to carry the printing-ink, and an inking device permanently located in the path of said punch and traversed by the pins thereof, substantially as set forth.

13. In a check-protector, the combination of a key-lever having a limited range of movement, a key on the key-lever, depressible beyond the lowest position of the key-lever, perforating-punches, and a lever-plate carrying a piece adapted to move the perforating-punches, said lever being operated by the further movement of the key, substantially as set forth.

14. In a check-protector, the combination, with the case carrying the perforating-punches, of a printing-bed, a device for depressing the punches, a coacting registering mechanism carried partly by said device and partly by said printing-bed and carrying-case, respectively, the parts on said device co-operating both with the carrying-case and printing-bed, whereby if either is out of alignment the operating device cannot be moved to advance the punch which has been brought to position, substantially as set forth.

15. In a check-protector, the combination, with the case carrying the perforating-

punches, of a printing-bed, a device for de-
pressing the punches, a coacting registering
mechanism consisting of suitable parts car-
ried by said device and adapted to register
5 with openings both in the printing-bed and
carrying-case when the machine is adjusted
and preventing movement when either the
bed or case is out of alignment, substantially
as described.

This specification signed and witnessed this 10
13th day of September, 1890.

EDWIN G. BATES.

Witnesses:

W. PELZER,
E. CONRAN.

NEXT ITEM

Numerierstempel von EDWIN GRANVILLE BATES in New York (V. St. A.). Um das fortlaufende Numerieren von Coupons und das Paginieren von Büchern usw. einfacher und schneller bewerkstelligen zu können, als dies durch Auswechseln der Typenziffern des Satzes von Hand geschehen kann, hat

man Maschinen und Apparate konstruiert, die, wenn solid gebaut, exakt und zuverlässig arbeiten. Die einfachste Art dieser Numeriermaschinen ist der Handnumerator, welcher ähnlich den üblichen Firmenstempeln konstruiert, seine Färbung an einem kleinen, in einem Kästchen unter dem Schieber befindlichen, mit Stempelfarbe getränkten Kissen erhält und dessen Zifferwerk sich beim Herunterdrücken des Schiebers (Griffes) gleichsam umklappt, so dass die gefärbte Zifferreihe zum Drucken kommt. An dem Fussgestell können kleine Marken angebracht werden, so dass der Apparat sich auf die vorgedruckten Koupons genauest aufsetzen lässt, damit auch die einzudruckende Ziffer stets ihren richtigen Stand erhält. — Derartige Apparate arbeiten sehr schnell, weil sie sich auch selbst fortändern, so dass man, je nach Übung, 700 bis 1200 Nummern pro Stunde damit eindringen kann.

Eine von BATES jüngst gemachte Erfindung bezieht sich auf eine Stempelvorrückung, mittels deren durch eine einfache Verstellung eine und dieselbe Zahl beliebig oft abgestempelt oder irgend eine beliebige Zahl zweimal abgedruckt und dann der Apparat auf die nächsthöhere Zahl eingestellt werden kann oder aber fortlaufende Zahlen gestempelt werden können. Alle diese Veränderungen im Arbeitsgang der Vorrichtung können durch Verstellung eines einzigen Hebels herbeigeführt werden, welcher gleichzeitig als Zeiger dient und zu diesem Zwecke über einer Skala angeordnet ist, um die Art und Weise der durch die Vorrichtung zu bewirkenden Numerierung anzugeben. Ferner ist dieser Handstempel mit einem Farbenbehälter versehen, welcher in eine zur Zuführung von Farbe geeignete Lage gebracht werden kann, ohne dass ein Beschmutzen der Finger möglich ist. — Der ganze Apparat nimmt einen verhältnismässig kleinen Raum ein, kann mit geringen Kosten hergestellt werden und erweist sich als durchaus zuverlässig. — Zur Bethätigung der für das Abdrucken von aufeinanderfolgenden Zahlenwerten erforderlichen Anzahl von Typenrädern wird ein System von oscillierenden Transportklinken benutzt, welche innerhalb des ringförmigen Hohlraumes der Typenräder liegen und zur Umdrehung der letzteren dienen. Die Typenräder sind mit der üblichen Anzahl von tiefen und flachen Nuten versehen. Durch diese Anordnungsweise wird eine Ersparnis an Raum sowie an Kosten in der Herstellungsweise erzielt und die Wirksamkeit der Stempelvorrückung erhöht. Ausser den den Abdruck vermittelnden Typenrädern werden zwei Schalträder verwendet, von denen das eine den Stempel zu einem zweimaligen Abdruck eines jeden der aufeinanderfolgenden Zahlenwerte veranlasst, während das andere das fortgesetzte Stempeln einer und derselben Zahl mittels des Handstempels ermöglicht. — Beide Schalträder liegen mit den Typenrädern auf einer gemeinsamen Achse. Die die Transportklinken tragende Welle ist so gelagert, dass sie zur Seite geschoben werden kann, um so behufs zweimaligen Abdruckes derselben Zahl, was einfach mit »Doppeldruck« bezeichnet werden soll, die Überführung der Sperrklinke des Doppeldruckschaltrades in die Arbeitsstellung zu ermöglichen und dieselbe andererseits auf das Schaltrad für den mehrmaligen Abdruck einer und derselben Zahl (was kurz als »wiederholter Druck« bezeichnet werden soll) einstellen zu können. — An dem verschiebbaren Gehäuse, welches die Typenräder umschliesst, ist ferner eine Verschlussvorrichtung angebracht, durch welche dieses Gehäuse in einer gegebenen Stellung festgehalten wird, wenn der Farbbehälter mit Farbe gefüllt werden soll. Jedes der zwischen dem Einerrad und dem letzten Rad liegende Typenrad wird mit einer abweichenden Form von Typen (Vorschubtypen) versehen, welche die Ziffer »0« tragen und, wenn der Stempel niedere Zahlenwerte abdruckt, ausser Druck-

stellung gebracht werden; dieselben treten erst zur geeigneten Zeit beim Abdrucken von höheren Zahlenwerten in Thätigkeit. Aus dieser Anordnung ergibt sich eine Herabminderung im Durchmesser der Typenräder.

Verfahren und Vorrichtung zum Biegen von Druckplatten für Rotationsmaschinen von ALEXANDER GRAY. Der Zweck des vorliegenden, in verschiedenen Ländern patentierten Verfahrens ist der, die Platten, die bei Rotationsdruckmaschinen benutzt werden, genau nach einer bestimmten Krümmung zu biegen, so dass sie sich der Krümmung des Cylinders, auf welchem sie benutzt werden sollen, genau anpassen. — Bei den bisher gebräuchlichen Verfahren geschieht dies häufig unvollkommen, und die Platten werden bis zu einem gewissen Grade beschädigt, während sie gebogen werden. Um diesem Übelstande abzuweichen, biegt man nach vorliegender Erfindung die Platten dadurch, dass man sie über eine konvexe Form legt und sie auf diese Form durch Flüssigkeitsdruck anpresst, welchen man auf die Rückseite eines biegsamen Materials wirken lässt, das auf die Fläche der Platte gelegt wird. — Auf diese Weise wird die ganze Fläche der Platte gleichmässig und gleichzeitig auf die Form niedergedrückt, und zwar ohne jede Gefahr, die Druckfläche durch das Pressen zu beschädigen, und die unregelmässige Krümmung, welche jetzt oft aus Mangel einer gleichmässigen und gleichzeitigen Pressung auf der ganzen Plattenfläche entsteht, wird vermieden.

Die Form ist auf einen etwas kleineren Halbmesser abgedreht als der Cylinder, auf welchem die Platten befestigt werden sollen. Der genaue richtige Halbmesser muss in jedem Falle durch den Versuch bestimmt werden, da er sich nicht nur mit der Grösse des Cylinders, sondern auch mit der Beschaffenheit des benutzten Rücklagemetalls oder Schriftmetalls und mit der Dicke der Platte ändern muss. — Auf einer Seite der Form befindet sich ein Rand, um der Platte die richtige Lage auf der Form geben zu können. — Um den Apparat zu benutzen, wird die Form auf den Konsolen herausgeschoben und daselbst so stark erhitzt, dass darauf gespritztes Wasser unter Zischen verdampft. — Ist die zu biegende Platte in der gewöhnlichen Weise erhitzt worden, wird sie auf die Form gelegt, mit einem Stück Filz bedeckt und mit der Form in die Presse geschoben. Der die Form tragende Tisch wird nun mittels des Hebelwerks gehoben, dann wird Wasser oder Luft unter Druck in den Oberteil eingeleitet, und der wasserdichte Stoff hierdurch auf die Platte herabgedrückt. — Die Platte bleibt etwa eine halbe Minute unter Druck, man lässt dann das Wasser ablaufen. Der Tisch wird herabgelassen, die Form herausgeschoben, die Platte herausgenommen und abgekühlt. — Obiger Biegeapparat wird sich jedoch in der Anschaffung nicht gerade billig stellen.

Schreibmaschine mit Buchaufleger von SEWARD AYMOR DEAN in Minneapolis (Minnesota, V. St. A.). Genannter hat sub Nr. 68994 Neuerungen an Schreibmaschinen zur Patentierung gebracht, die insbesondere dem Zwecke dienen, Überschriften und Textworte in Bücher zu drucken, während dabei die Möglichkeit nicht ausgeschlossen ist, die Schreibmaschine auch zum Bedrucken einzelner Papierblätter zu verwenden. — Die Einzelbestimmungen der für die Erfindung wesentlichen Neuerungen beziehen sich: 1) auf die Gesamtausführung der Schreibmaschine in der Weise, dass sie ebensowohl verwendbar ist zur Erzeugung von Druckschrift in Büchern verschiedener Grösse und Dicke, als auch zum Bedrucken einzelner Papierbogen und Notizblätter; 2) auf ein neues Auflagergestell für das Buch bzw. das Papier, mit Einrichtung zur selbstthätigen Einstellung, um die Schreibfläche in die geeignete ebene Lage zu bringen; 3) auf die Vorrichtung zur Verschiebung des

NEXT ITEM

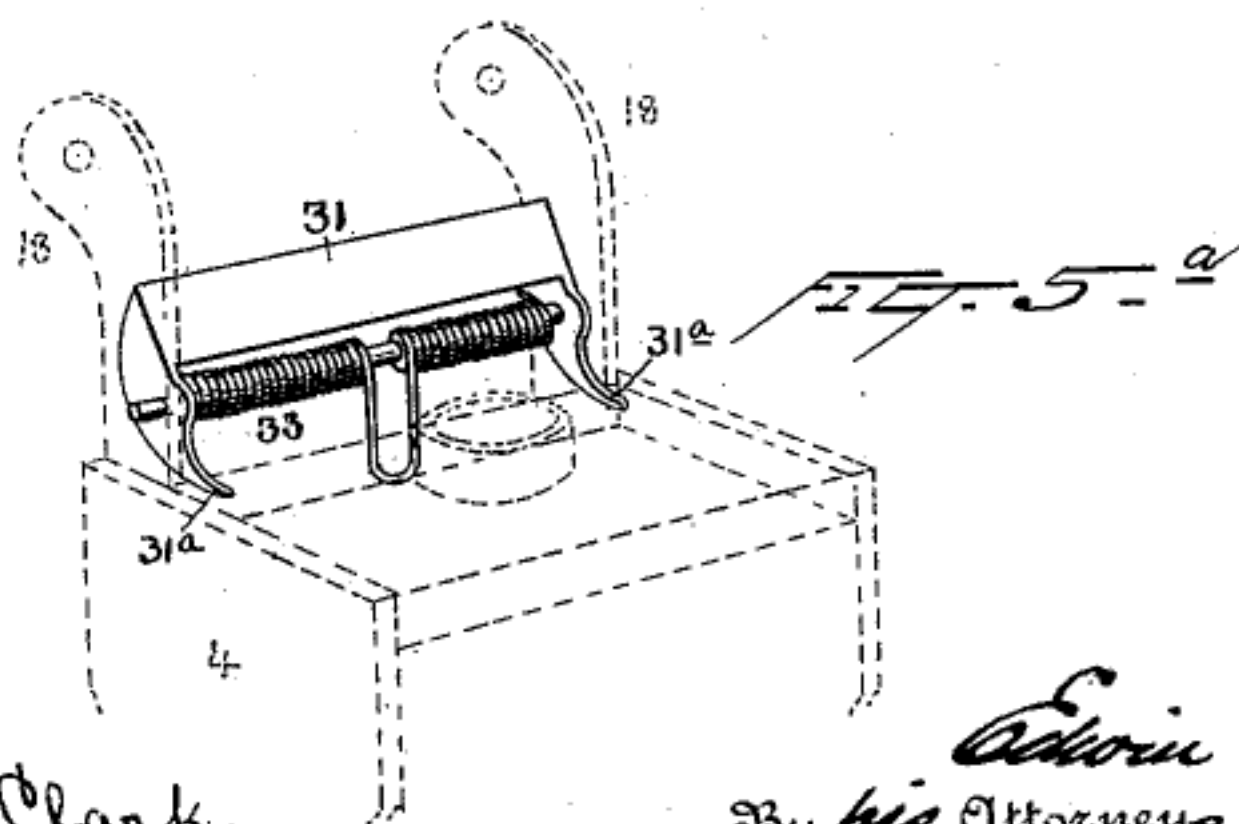
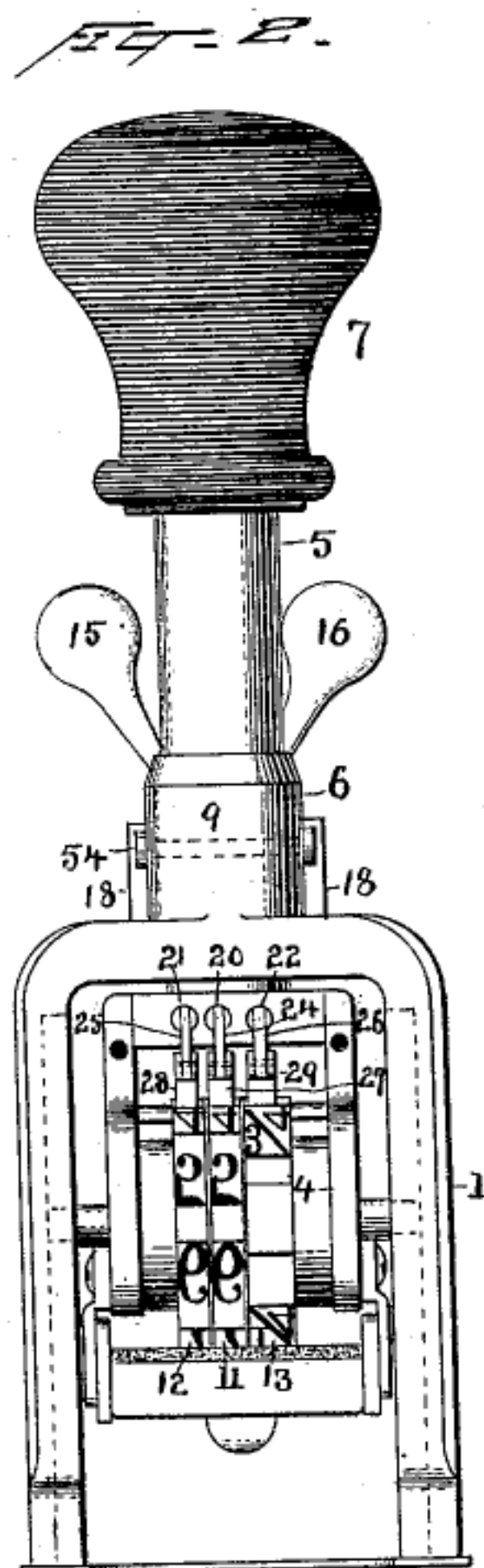
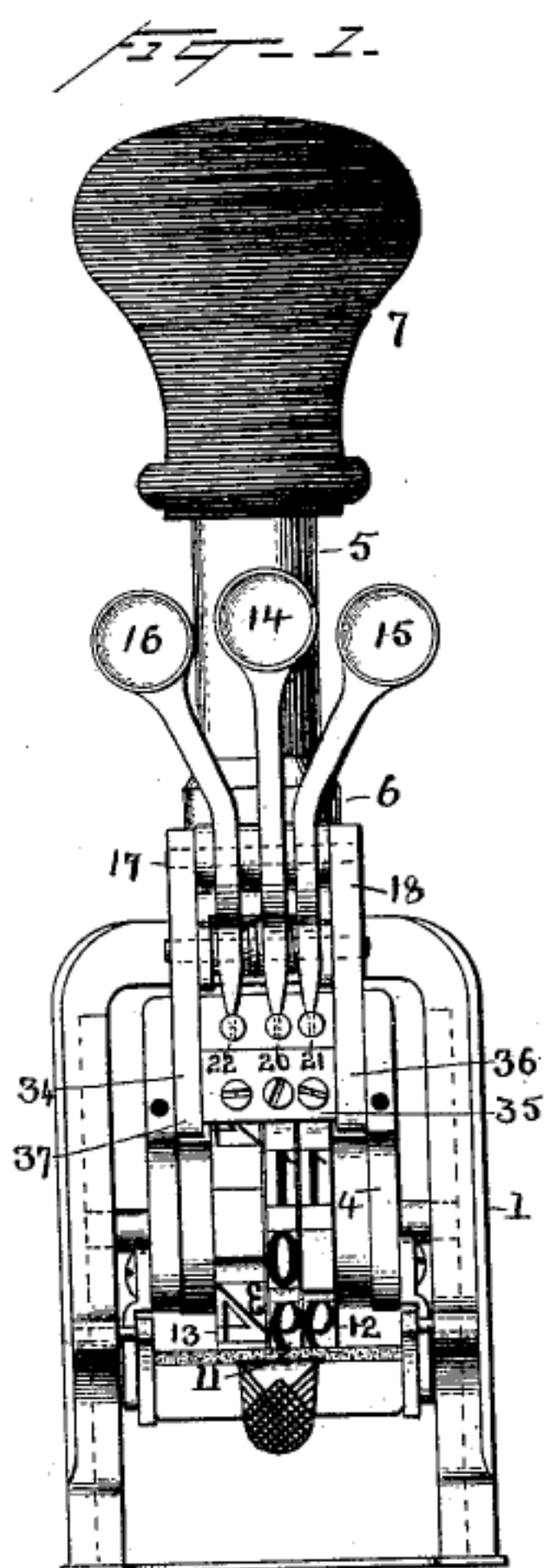
(No Model.)

2 Sheets—Sheet 1.

E. G. BATES.
NUMBERING MACHINE.

No. 489,449.

Patented Jan. 10, 1893.



Witnesses
J. H. Clark.
W. F. O'Leary.

Inventor
Edwin G. Bates
By his Attorneys
J. H. Clark & W. F. O'Leary

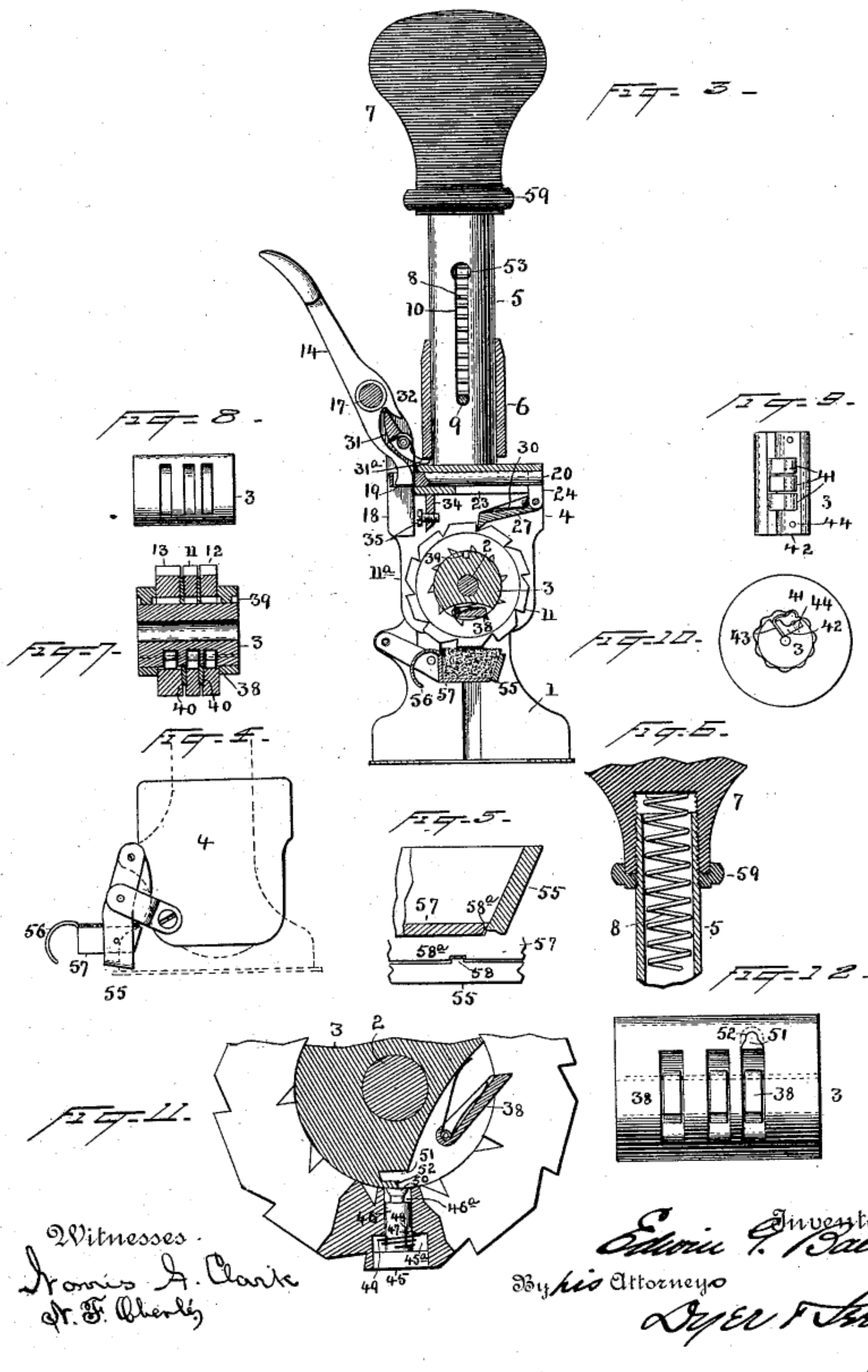
(No Model.)

2 Sheets—Sheet 2.

E. G. BATES.
NUMBERING MACHINE.

No. 489,449.

Patented Jan. 10, 1893.



UNITED STATES PATENT OFFICE.

EDWIN G. BATES, OF NEW YORK, N. Y., ASSIGNOR TO THE BATES MANUFACTURING COMPANY, OF NEW YORK.

NUMBERING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 489,449, dated January 10, 1893.

Application filed October 2, 1891. Serial No. 407,515. (No model.)

To all whom it may concern:

Be it known that I, EDWIN G. BATES, a citizen of the United States, residing at New York city, in the county and State of New York, have invented a certain new and useful Improvement in Numbering-Machines, of which the following is a specification.

The object of my invention is to simplify the construction of hand numbering machines and more especially that style of machine known as a "yardage machine" which is the numbering machine generally used for stamping the number of yards contained in a piece of cloth, ribbon, &c. upon a tag to be attached to such material.

The changing of the type-wheels in this class of machine is done by means of finger-levers and contains no mechanism for changing the wheels automatically. The reason for this is that the printing of numbers with yardage machines is seldom consecutive and by employing finger-levers the wheels are independently changeable and are therefore more readily brought to the desired position.

By my invention the size and weight of the machine is considerably reduced and the various parts are so constructed that prolonged use will be attendant with a minimum of fatigue to the operator, and my invention consists in the various novel devices and combinations of devices hereinafter set forth and pointed out by the claims.

In the accompanying drawings forming a part hereof, Figure 1 is a front elevation of the machine; Fig. 2 is a rear elevation; Fig. 3 is a partial elevation and vertical section looking from the left of Fig. 2; Fig. 4 is a view showing the position of the ink-pad box when in position for receiving a supply of ink; Fig. 5 is an enlarged view showing the means for keeping the ink pad box locked in its normal position; Fig. 5^a is an enlarged perspective view of the lever for removing the inking pad from contact with the type-wheels before rotating the same; Fig. 6 is a view showing the manner of fastening the handle to the shank which carries the operating parts; Fig. 7 is a longitudinal section of the hub, type-wheels and stationary disks; Fig. 8 is a view of the hub with the retaining pawls for the wheels omitted, showing

the cavities wherein these pawls are placed; Fig. 9 is a view of a modified form of hub and retaining pawls, the pawls being made of pieces of spring metal; Fig. 10 is an end view of the same and a wheel placed thereon showing the notched or corrugated inner periphery of the wheel with which the spring pawls engage; Fig. 11 is a view, partly in section and partly in elevation, of a portion of the hub and a type-wheel, showing the form of drop-cipher employed; and Fig. 12 is a view of the hub showing one of the cavities for the retaining pawls extended so as to form the means for holding the drop-cipher out of the printing position.

1 is a U-shaped frame in which works the ends of the type-wheel shaft 2, upon which is placed the hub 3, carrying the type-wheels, the whole being supported in the casing 4, placed at the lower end of a plunger 5, which works in the collar 6 upon frame 1. The plunger 5 has a handle 7 at its upper end and inside the plunger is placed a spiral spring 8, held between the pin 9 and the inside of the handle. The pin 9 is passed through openings in the collar 6 and the slots 10 on each side of the plunger 5, which permits the plunger to be forced downward when printing and is returned to its normal position by the spring 8.

In the machine as illustrated there are three type-wheels. 11 is the unit wheel; 12 is the tens wheel; and 13 is the fraction wheel.

Heretofore in numbering machines having the shifting pawls for the type-wheels working on the outside of the wheel, as distinguished from wheels rotated by pawls working in notches on the inner periphery of the wheel, such pawls operated in the teeth of ratchet wheels rigidly secured to the printing wheels. These ratchet wheels of course considerably increased the total width of the machine and added considerably to the weight and cost thereof. In some cases it has been proposed to advance type-wheels by means of notches between the type, but in these cases complicated pawl mechanism for advancing the wheels was necessary. The type-wheels employed by me are substantially the width required for the face of the type and simple advancing pawls are employed. The charac-

ters on the wheels are as usual cut in relief, but the spaces between the characters are so cut as to form an angular notch, as clearly shown in Figs. 3 and 11 of the drawings, thus forming upon the outer periphery of the wheels and between each character the notches 11^a with which the pawls for actuating the wheels engage, said pawls riding directly over the face of the numerals. The pressure of the pawls upon the face of the type being very slight, no injury is apt to result to the type from the constant travel of the pawls over them. By forming the notches on the wheels in this manner it will be seen the width of the machine is considerably reduced.

The changing of the type-wheels is done by the finger-levers 14, 15 and 16. These levers are pivoted on the pin 17 supported in the uprights 18 extending from the casing 4. The lower ends of the levers enter into slots 19 formed in the sliding bars 20, 21 and 22, which bars are placed in ducts or channels formed in the top piece of the casing 4; the channels are slotted for a portion of their length as at 23, through which slots extend the lugs 24, 25 and 26 depending from the rear ends of the sliding bars 20, 21 and 22, respectively, and upon these lugs are pivoted the pawls 27, 28 and 29, respectively. These pawls engage with the notches 11^a on the type-wheels to actuate the same. The pawls have hair-springs 30 placed in a cavity formed in their upper sides, which springs act to force the pawls into the notches 11^a.

Pivoted upon a bar 33^a supported between the two uprights 18, which as before stated are carried by frame 4, and below the pivots of the finger-levers is a spring-pressed lever 31, which engages with the projections 32 on the finger-levers 14, 15 and 16. The lever 31 has two curved lower legs 31^a which bear against the under side of the top part of frame 1. Upon operating any of the finger-levers to rotate a type-wheel, the projection 32 will force the lever 31 downward, and by reason of the legs 31^a bearing against the frame 1 it will give a slight downward movement to the casing 4 and consequently a slight downward movement is given to the inking pad box away from the wheels. If the casing 4 should be held stationary and the lever 14, 15 or 16 be operated, the frame 1 would be moved relative to the casing, and this would accomplish the same result as the downward movement of the casing 4. The lower ends of the finger-levers have a very slight free movement in the slots 19, so that the projections 32 will act on the lever 31 before motion is communicated to the rotating pawls. The movement given the inking pad box through the lever 31 is just sufficient to place the pad out of contact with the face of the type.

The pivot bar 33^a of the lever 31 has coiled around it a spring 33. The ends of this spring bear against the front of the lever and at the middle the spring has a loop in it which bears against the top-plate of the casing 4; this

gives more pressure to the spring when it is strained. This spring serves to return the finger-levers and type-wheel pawls to their normal position, after rotating the wheels.

The top-piece of the casing 4 has a flange 34 projecting from its under-side and passing through this flange are set-screws 35, 36 and 37. These set-screws are adjustable so as to limit the forward movement of the type-wheel pawls. It will be readily seen that these limiting-stops provide a simple and efficient means for securing the proper distance of rotation of the type-wheels for bringing the numerals into the printing position.

The hub 3 has recesses formed therein into which are placed the retaining pawls 38 for preventing a backward movement of the type-wheels while the shifting-pawls are returning to their normal position.

In Figs. 9 and 10 is shown a modified form of hub and type-wheel. In this form instead of the retaining pawls 38, I employ pawls 41 made of spring metal. The hub 3 has a section cut out of it, either angular as shown or any other form. A clamping-piece 42 of a shape corresponding to the cut-out section of the hub is employed to hold the spring metal pawls in place. In the form shown the spring metal pawls are bent into an angle at 43, which part is held between the angle formed in the hub 3 and the clamp 42. Pins 44 serve to hold the clamp in place. The outer ends of the pawls 41 are curved to fit corresponding notches formed upon the inner periphery of the type-wheel. These notches however may be of any other desired form and the ends of the spring metal pawls bent to a corresponding shape. The type-wheels have placed between them thin disks 40 and the wheels are mortised to receive the disks thus permitting the wheels to be brought close together. The hub has a slot 39 formed therein as shown in Figs. 3 and 7, to which slot the disks 40 are keyed so that they will be stationary with relation to the type-wheels. The object of these stationary disks is to permit of the rotation of each type-wheel independently and without liability of rotating its adjoining wheel through friction or otherwise.

In a "yardage machine" having three wheels (a unit, a tens, and fraction wheel) it is not necessary to have a drop-cipher. The unit wheel has numerals 1 to 0, the tens wheel 1 to 9 and a blank space, and the fraction wheel the desired fractions and one or more blank spaces. To print the single numerals the unit wheel is brought to any desired number and the tens and fraction wheels to a blank space.

In a machine having a unit, tens and hundredths wheel, or more, it is sometimes desirable, in order to be capable of printing with the unit wheel only, to have a drop-cipher in the wheels intermediate the unit and last wheel, or else to provide wheels with eleven spaces, having the numerals 1 to 0 and a blank space. The fraction-wheel has one or more

blank spaces to permit even numbers to be printed. In Fig. 11 is shown a form of drop-cipher which I prefer to employ. The cipher-section 45 fits into the recess 45^a cut the width 5 of the wheel and is supported upon the stem 46 which works through the hole 46^a. The stem 46 is recessed at 47 and a pin 48 passes through the type-wheel against which the shoulder formed by the recess strikes and prevents the cipher-section from dropping out of the wheel or being forced farther out of the recess 45^a than the printing position by the spring 49 coiled around the stem 46. This spring is coiled in a conical shape so that 15 when the drop-cipher is held out of the printing position the space occupied by the spring compressed is only the thickness of the wire. This allows more bearing surface for the stem, as the recess 45^a need only be slightly 20 deeper than the thickness of the cipher-section. The inner end of the stem 46 is reduced to form a head 50, which when the drop-cipher is pressed inward will fit into the cavity 51 formed in the hub 3. This cavity is preferably 25 made as an extension of the cavities for the retaining-pawls 38, as shown in Figs. 11 and 12. To place the cipher out of the printing position the type-wheel is turned to bring the cipher slightly past the printing position 30 (which would be as shown in Fig. 11), so that the stem would be free to be pressed down into the cavity holding pawl 38 and on a backward movement the head 50 is forced into the cavity 51 and held in that position by the 35 overhanging ledge 52. When the wheel is rotated to print another number the head will pass from under the ledge 52 and the spring 47 will force the drop-cipher into its printing position again.

40 The ink pad box is a modification of the one shown in my patent No. 456,874. On the lower edge of the frame 55 at a point about midway between the sides of the frame is formed a projection 58 in any suitable manner, and this projection bears against a rounded 45 section 58^a at the middle of the box 57. The projection 58 acts as a wedge to hold the box 57 in place when returned to the position shown in Fig. 5, which is an enlarged view.

50 In Fig. 4 is shown the position in which the ink-pad box is held while supplying it with ink. To ink the pad the handle 7 is forced down as in printing and when the enlargement 53 of the slot 10 is opposite the head 54 55 (Fig. 2) on the pin 9 the said head is pressed into it and the casing 4 held in the position shown. The pad is then brought to the position shown, by drawing the pivoted ink pad case outward, using the handle 56.

60 It has been the practice in the manufacture of hand numbering machines to screw the handle 7 direct upon the shank 5, but very often the handle is screwed so far down on the shank as to cause the shank to jam hard 65 upon the inside of the handle, resulting in either the stripping of the thread in the wooden handle or causing it to split. I over-

come this objection by screwing upon the shank the nut 59 (Fig. 6) to a point at which the handle will meet it before the inside can 70 jam upon the upper edge of the shank. In addition to this function the nut acts as a coliar upon the handle by having it cut out, thus forming a flange which fits snugly around the handle. 75

What I claim is,

1. The combination, in a printing machine, of a shaft or hub movable forward and backward in the act of printing, several type-wheels placed side by side thereon, said wheels 80 having notches between their types, a separate pawl for each wheel and bearing on the surface thereof, and means for reciprocating each pawl at will to move the desired wheel or wheels, substantially as described. 85

2. The combination in a hand-stamp of reciprocatory character-bearing wheels provided with notches upon their peripheries intermediate the characters and of substantially 90 the form shown, pawls engaging with said notches, there being a pawl for each wheel and means for operating said pawls to rotate the wheels, substantially as set forth.

3. The combination, in a printing machine, of character-bearing wheels mortised on adjacent faces and provided with notches on 95 their peripheries intermediate the characters, shifting pawls working in said notches, means for operating said pawls, and disks in the spaces formed by the mortises, substantially 100 as set forth.

4. The combination in a printing machine of character-bearing wheels having their sides mortised, and stationary disks between said type-wheels and fitting into said mortises, 105 substantially as set forth.

5. The combination, in a printing machine, of a hub or shaft, character-bearing wheels side by side thereon and near together, adjacent faces of the wheels being mortised, and 110 a disk, thicker than the space between the peripheries of two adjacent wheels, placed between such wheels so that the disk occupies the enlarged space without increasing the distance between the wheels, substantially as set 115 forth.

6. The combination, in a hand stamp, of a hub or shaft, and means for reciprocating it character-bearing wheels side by side thereon and near together, adjacent faces of the wheels 120 being mortised, and a disk, secured to the hub or shaft, thicker than the space between the peripheries of two adjacent wheels, placed between such wheels so that the disk occupies the enlarged space without increasing the distance 125 between the wheels, substantially as set forth.

7. In a numbering machine, the combination of type-wheels having notches on their inner peripheries, a shaft or hub upon which 130 said wheels rotate, spring metal pawls 41 secured to said shaft or hub, the free ends of said pawls being shaped to correspond to the notches on the inner peripheries of said wheels

and engaging therewith, and means for actuating said wheels, substantially as set forth.

8. In a numbering machine, the combination of type-wheels having notches on their inner peripheries, a shaft or hub upon which said wheels rotate, spring metal pawls 41 secured in a recess formed in said shaft or hub by the clamping plate 42, the free ends of said pawls being shaped to correspond to the notches on the inner peripheries of said wheels, and engaging therewith, and means for actuating said wheels, substantially as set forth.

9. In a printing or numbering machine, the combination of type-wheels, an inking pad box 57 pivoted in a frame 55, said frame 55 having a projection 58 acting as a wedge to lock said pad box 57 in the frame, means for actuating said type-wheels, and means for removing said inking pad from its inking position when printing, substantially as set forth.

10. In a numbering machine, the combination of finger-levers, a lever 31 having legs 31^a, projections 32 on said finger-levers engaging with said lever 31, said finger-levers and lever 31 being pivoted to or upon arms extending from the casing 4, and said legs 31^a engaging with the main frame 1, substantially as and for the purpose set forth.

11. In a numbering machine, the combination of finger-levers pivoted between arms extending from the casing 4, a lever 31 pivoted upon a bar 33^a supported between said arms, said lever 31 having legs which engage with the main frame 1, projections 32 on said finger-levers engaging with said lever 31, and a spring 33 coiled around said pivot bar 33^a having its ends bearing against the lever 31, and a loop formed at the middle bearing against the casing 4, for returning the levers to their normal position, substantially as and for the purpose set forth.

12. In a numbering machine, the combination of type wheels carried on a shaft or hub supported in a reciprocating casing 4, pawls 27, 28 and 29 engaging with said type-wheels, finger-levers connected to said pawls by bars 20, 21 and 22 for actuating said pawls to rotate the type-wheels, substantially as set forth.

13. In a numbering machine, the combination of type wheels carried on a shaft or hub supported in a casing 4, pawls 27, 28 and 29 engaging with said type-wheels, sliding bars 20, 21 and 22 working in channels formed in

the top piece of said casing 4, lugs 24, 25 and 26 connected respectively to one end of said bars, said channels having slots through which said lugs extend, and to which lugs said pawls 27, 28 and 29 are pivoted, and finger-levers entering slots formed at the other ends of said sliding bars, whereby motion is communicated to said sliding bars and pawls to operate the type-wheels, substantially as set forth.

14. In a numbering machine, the combination of a type-wheel, a hub upon which said type-wheel rotates, a loose section in said type-wheel carried by a stem working radially in said type-wheel, said stem having a shoulder or head formed at its free end, a cavity formed in the hub having an overhanging-ledge which engages with the shoulder or head formed on the stem when said head is forced into the cavity, whereby said loose section is held out of its normal position, and a spring for moving said section to printing position substantially as set forth.

15. In a numbering machine the combination of a type-wheel, a hub upon which said type-wheel rotates, a loose section in said type-wheel carried by a stem working radially in said type-wheel, said stem having a shoulder or head formed at its free end, a cavity formed in the hub having an overhanging-ledge which engages with the shoulder or head formed in the stem when said head is forced into the cavity, whereby said loose-section is held out of its normal position, and a spring coiled around the stem as shown for returning the loose section to its normal or printing position, substantially as set forth.

16. In a numbering machine the combination with a plunger carrying the casing containing the printing mechanism, of a jam-nut screwed onto said plunger, said nut having a flange or collar formed thereon which surrounds the lower end of the handle when the said handle is screwed on the plunger and against the jam-nut, substantially as and for the purpose set forth.

This specification signed and witnessed this 30th day of September, 1891.

EDWIN G. BATES.

Witnesses:

J. A. YOUNG,
W. PELZER.

NEXT ITEM

E. G. BATES & C. SPIELMANN.
 TYPOGRAPHIC NUMBERING MACHINE.

(Application filed Aug. 30, 1897.)

2 Sheets—Sheet 1.

(No Model.)

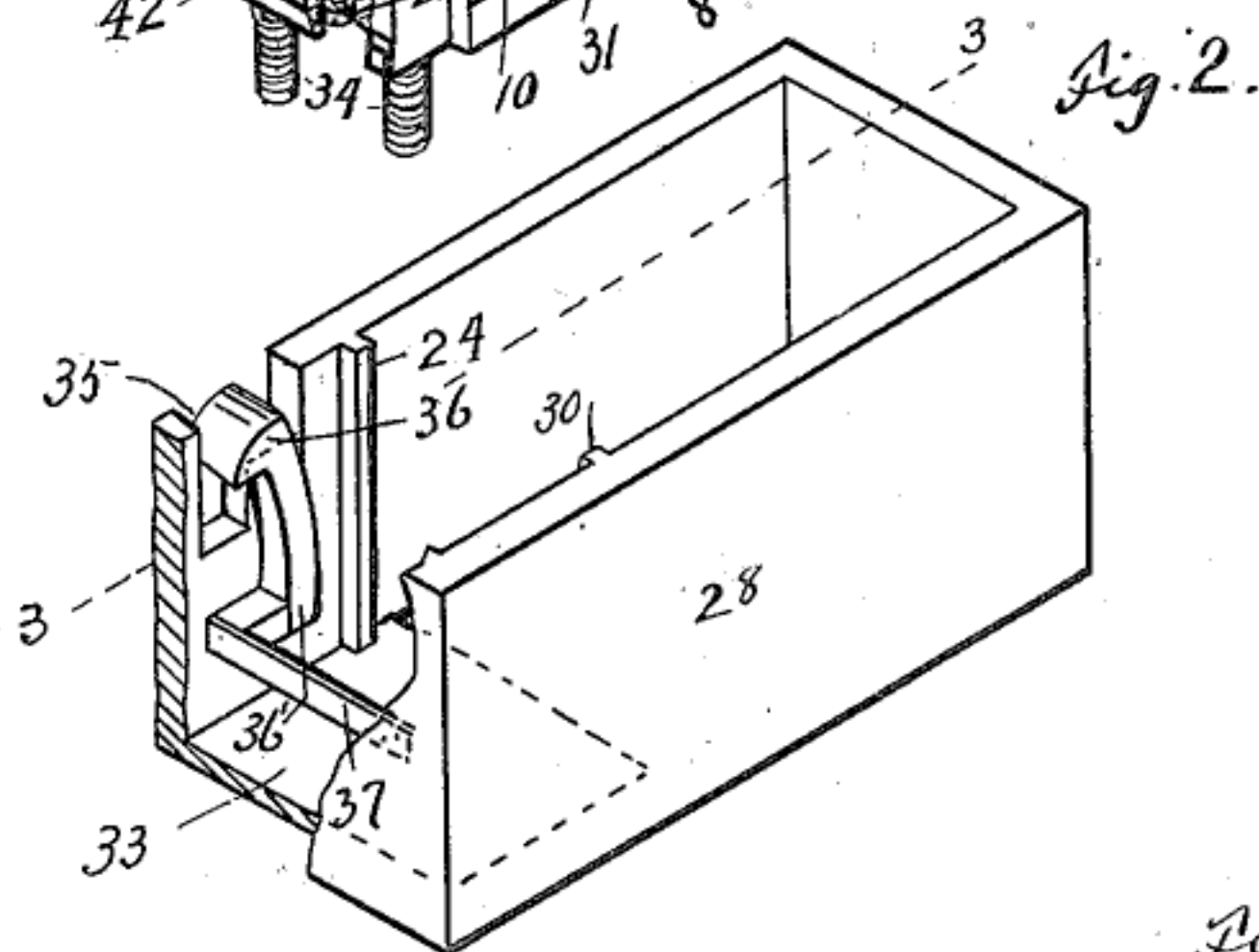
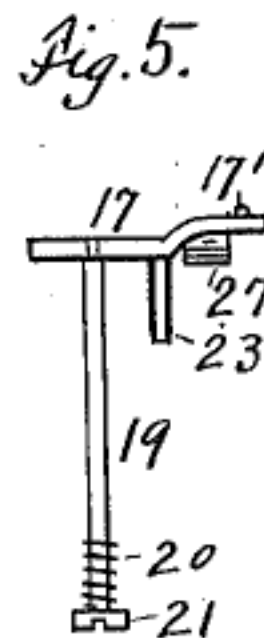
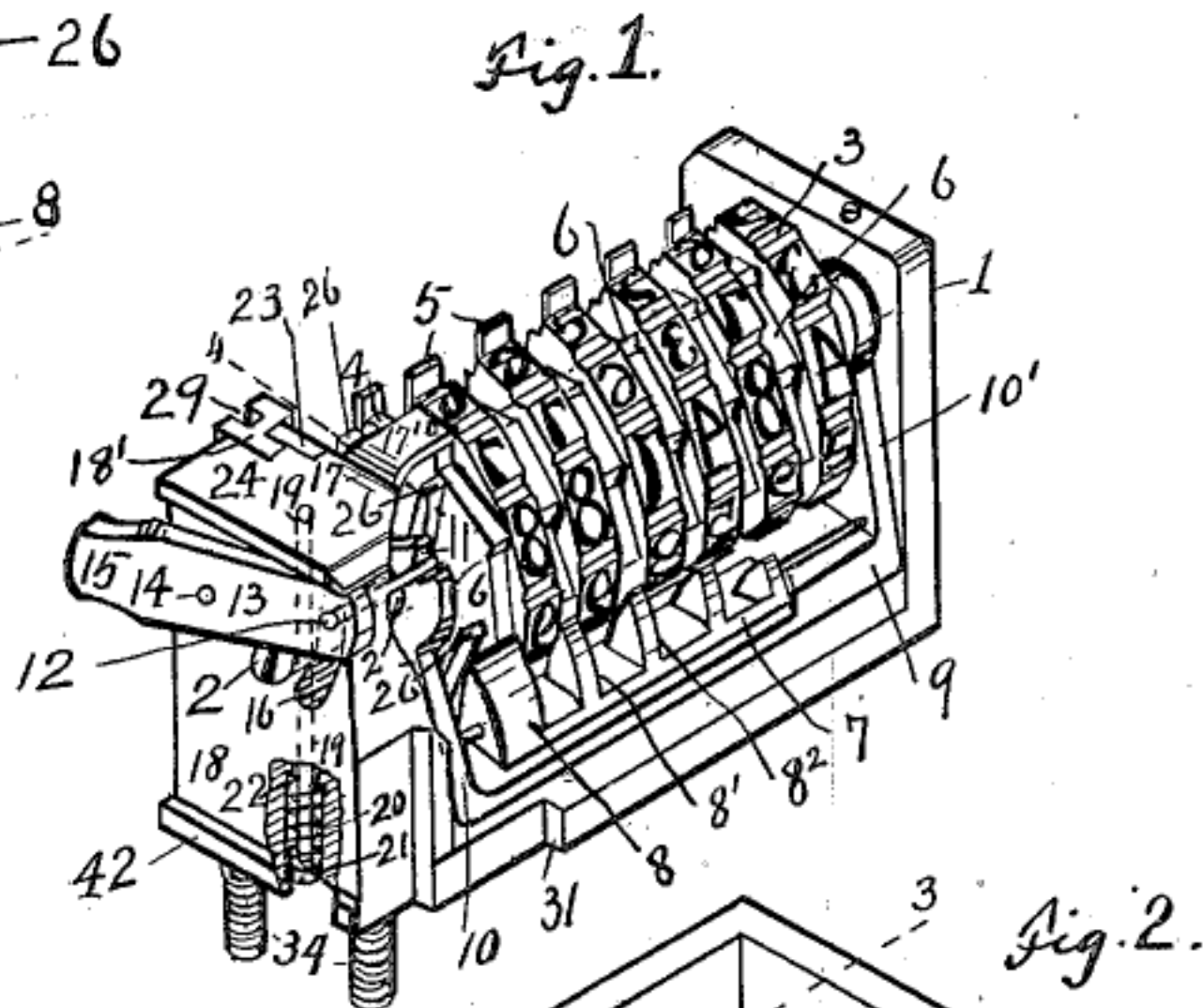
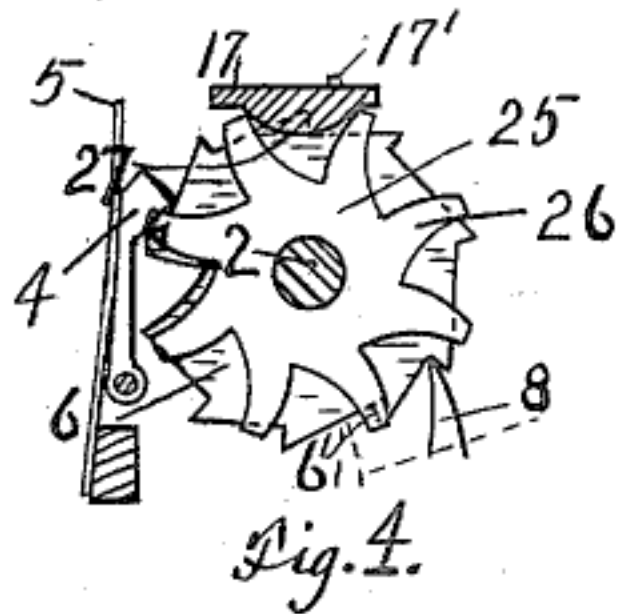


Fig. 3.

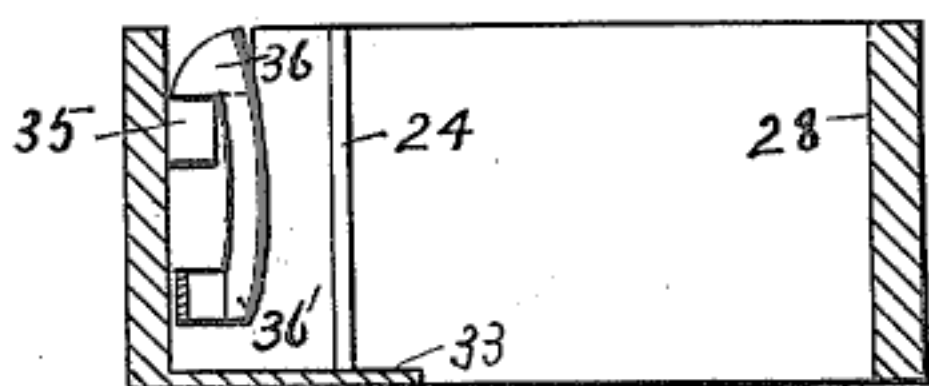
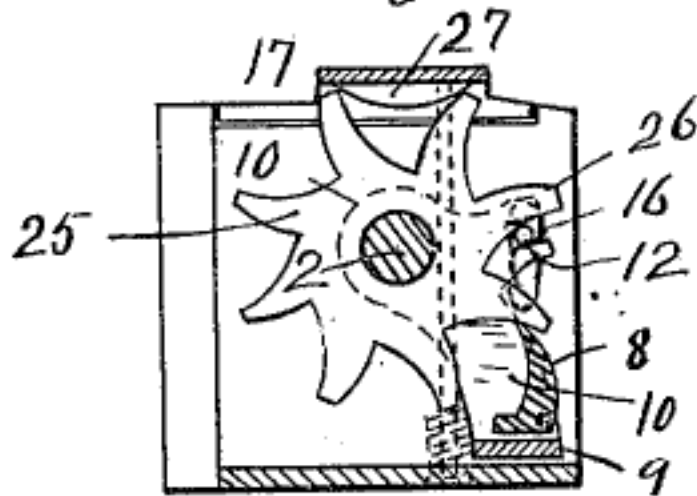


Fig. 14.



Witnesses

J. M. Goldy,
 H. L. Gould.

Inventors

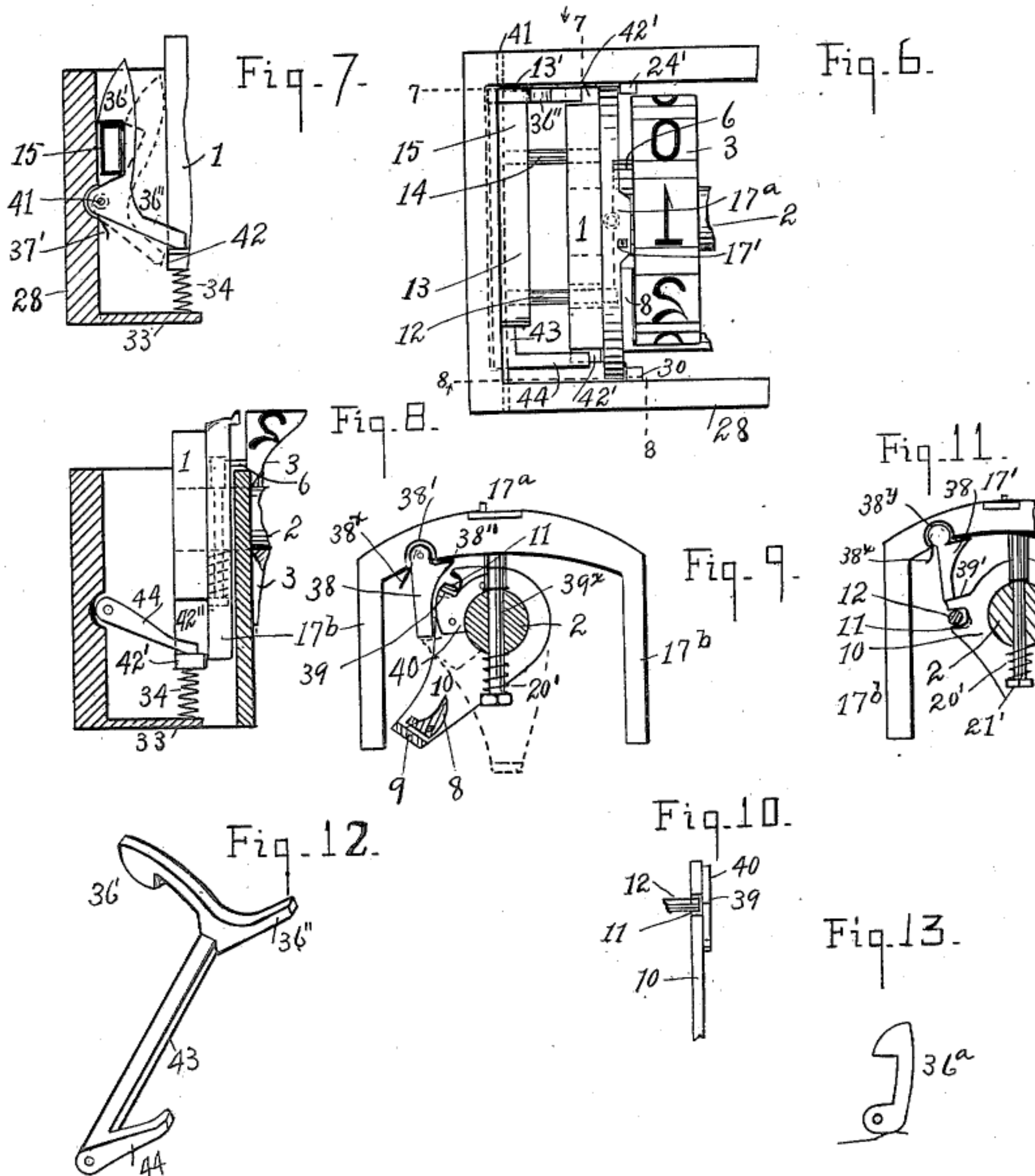
E. G. Bates & C. Spielmann
 By Charles M. Catlin
 atty.

E. G. BATES & C. SPIELMANN.
 TYPOGRAPHIC NUMBERING MACHINE.

(Application filed Aug. 30, 1897.)

2 Sheets—Sheet 2.

(No Model.)



Witnesses:

Francis W. Blackstone

Wm. R. Catlin

Inventors:

E. G. Bates & C. Spielmann

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UNITED STATES PATENT OFFICE.

EDWIN G. BATES AND CHARLES SPIELMANN, OF NEW YORK, N. Y., ASSIGN-
ORS, BY DIRECT AND MESNE ASSIGNMENTS, TO THE BATES MACHINE
COMPANY, OF SAME PLACE.

TYPOGRAPHIC NUMBERING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 661,437, dated November 6, 1900.

Application filed August 30, 1897. Serial No. 649,934. (No model.)

To all whom it may concern:

Be it known that we, EDWIN G. BATES, a resident of New York, county of New York, and CHARLES SPIELMANN, a resident of New York, (Brooklyn,) county of Kings, State of New York, citizens of the United States, have invented certain new and useful Improvements in Typographic Numbering-Machines, of which the following is a specification.

10 This invention relates to automatic numbering-machines adapted to be locked in a chase with a form, being surrounded by type-matter or used separately when numbers only are to be printed; and the main object of the invention is to provide such a machine with means for retarding rotary movement of the first or unit figure-wheel, and consequently of the following wheels as their pawls come into action, until there is a clearance between the printed paper and the peripheries of the figure-wheels.

Another object is to provide automatic catch and stop devices for the numbering-head.

25 In the drawings, Figure 1 is a perspective view of the numbering-head. Fig. 2 is a like view of a casing for the head. Fig. 3 is a vertical section on line 3 3 of Fig. 2. Fig. 4 is a partial section on line 4 4 of Fig. 1. Fig. 5 is an end view of a period plate or device detached. Fig. 6 is a plan of a modification. Fig. 7 is a section on line 7 7 of Fig. 6. Fig. 8 is a section on line 8 8 of Fig. 6. Fig. 9 shows a modified retarding device in elevation. Fig. 10 is a partial edge view thereof. Fig. 11 shows another modified device. Fig. 12 is a perspective view of a locking device. Fig. 13 shows a modified hook, and Fig. 14 is a vertical section of the numbering-head on a plane between wheel 25 and the first ratchet-wheel.

1 is a frame, in which is mounted a non-rotary axis 2, on which are several figure-wheels 3, normally held from turning by pawls 4 and springs 5, the pawls engaging teeth of the ratchet-wheels 6, each figure-wheel having such a ratchet-wheel secured to it.

7 is a pawl-plate, with stepped pawls 8 8'

8², &c., carried by the swinging plate 9, supported by arms 10 10', having bearings on the axis. Arm 10 has a notch 11, into which extends a pin 12 from lever 13, pivoted at 14 and having a head 15, extending out beyond the rear side of the numbering-head.

16 is a slot in which pin 12 can travel.

17 is a period-carrying device normally held on the end 18 of the frame 1 by the rod or screw 19, extending vertically through said end, being pressed down lightly by a spring 20, acting between the screw-head 21 and shoulder 22, which shoulder is formed by making the hole larger at the bottom than at the top, as shown in Fig. 1.

23, Figs. 4 and 5, is an arm projecting down from the period-plate, adapted to rest against one side of the channel-piece 18', forming a part of the frame end 18, the channel being adapted to fit and to move on rib 24. The period-plate 17 is movable in relation to the frame end 18 and channel-piece 18'. Arm 23 and rod 19 guide plate 17 in a straight vertical line when it is moved, as hereinafter explained.

17' is a period-printing projection on the plate 17.

In the preferred form of retarding device on the axis beside ratchet-wheel 6 of the first or unit figure-wheel is a loose wheel 25, having a different number of teeth 26 than wheels 6 have ratchet-teeth. Wheel 25, as shown, has eight teeth, and these do not correspond in angular position to the teeth of the ratchet-wheels. It will be found that when the first—that is, the longest—pawl 8, which is made wide enough to engage both wheel 6 and wheel 25, is in position to advance its figure-wheel (see dotted position in Fig. 4) the pawl must turn wheel 25 a certain distance before it can reach the next tooth 6' of the ratchet-wheel to advance it. On the under side of the period-plate is a curved tooth or cam 27, which fits in between the two upper teeth of wheel 25. The outer case 28, open at top and bottom, is adapted to receive the head.

24 is a rib adapted to fit a corresponding groove 29 in frame 1 to insure exact position

and accurate movement of the head. A similar guide-rib 30 may be placed on the opposite side of the case, and this may cooperate with shoulder 31 of the frame. Shelf 33 forms an abutment for springs 34 of the head.

In the rear side of the case is a notch 35, adapted to receive the head of pivoted lever 13, locked therein by an automatic spring-catch 36, 37 being its operating-spring.

When the numbering-head is pressed down into the case, the head of lever 13 pressing against the beveled head of the catch forces it back and when fully entered is engaged thereby, but not so as to prevent movement of the lever on its pivot. This construction provides for removal of the numbering-head from the case for cleaning or other purpose without removing any screws and merely by pressing back the catch, which can be done without even unlocking the form. When pressure is removed from the numbering-head, it is forced up a short distance by springs 34, as it is also after each printing impression. The period normally is in position level with the peripheries of the figures of the number-wheels in printing position, and these are when at rest (before being pressed upon) about an eighth of an inch or less above the height of type in the form, and upon being pressed in the act of printing descend to the height of the type, and upon pressure being removed the wheels and period move upward about one thirty-second of an inch, when the moving pawl comes in contact with one of the teeth of the loose wheel, advancing said wheel, causing one of its arms 26 to press against cam 27, forcing the period-block upward above the peripheries of the figure-wheels about one-sixteenth of an inch. As arm 26 passes the highest part of the cam the resistance to movement of the pawl decreases and the pawl freely advances the figure-wheels engaged thereby. Downward movement of the numbering-head in the case advances the pawl-plate by lever 13, the outer end of which is held by the catch, so that one or more of its pawls engage the next ratchet-teeth to advance one or more of the figure-wheels, which is accomplished when the head rises. Wheel 25, cam 27, and the yielding plate by which it is carried constitute means for retarding the advancement of the figure-wheels until they have positively separated from the printed paper.

Hook 36 is so supported that its lower end 36' normally stands when the head is in the case just above rib 42, thus forming a stop to limit the upward movement of the head. When the head is introduced, the combined catch and stop automatically yields to admit the end of the lever 13 below the catch and to allow the rib to pass below the stop, spring 37 then acting to hold the catch in engagement and the stop over the rib.

36^a, Fig. 13, is a modified hook adapted to catch and hold lever 13, but not adapted to

act as a stop and may be used with a separate stop device.

A modified device for retarding rotary movement of the unit figure-wheel is shown in Figs. 6, 8, 9, and 10. Instead of the period-plate of form shown in the figures above described and the loose wheel 25 a period device 17^a is used having guide-arms 17^b to insure straight up-and-down movement, also a pin 39^x, adapted to move vertically in a hole in the shaft, being pressed down lightly by spring 20'. This period plate or device, which spans the ratchet 6 on the unit-wheel 3, has a pawl 38, pivoted in a socket 38', adapted when the pawl-plate is moved into the position indicated by dotted lines in Fig. 8 by the depression of the numbering-head in the case 28 to engage a tooth or shoulder 39 on arm 10 of plate 9, supporting the stepped pawls and to retard movement of the unit-wheel until the pawl and tooth become disengaged. Notch 11, it will be understood, has the same purpose as the like notch in Fig. 1—that is, it is designed to receive the end of a pin 12, by which the pawl-plate is swung, as above described.

Tooth or shoulder 39 is formed on a metal piece 40, secured to the inner face of arm 10 in the position shown in Figs. 9 and 10. When the head is up, arm 10, tooth 39, and pawl 38 occupy the relative positions shown in full lines in Fig. 9, and when the head is pressed down in the act of printing arm 10 is thrown to dotted position—for example, by a pin 12 and cooperating parts, as shown in Fig. 1—thus bringing tooth 39 below the bottom of pawl 38, which is at once caused to engage said tooth by spring 38^x, and arm 10 in moving reversely must raise the period device against spring 20', thereby retarding the return—that is, the figure-wheel-feeding movement due to expansion of springs 34. Before arm 10 reaches its full-line position shoulder 39 will slip from under pawl 38, owing to the lateral movement of said pawl being limited by a projection or stop 38.

In Fig. 11 pawl 38 has a circular head which fits snugly in a similarly-shaped socket 38^y, of such shape as to hold the pawl without a pivot-pin and allowing a slight turning or hinge movement. In this form the pawl engages shoulder 39' formed on arm 10.

In order to automatically engage head 15 of lever 13 when the numbering-head is introduced into case 28, we may dispense with the notch 35 and terminate lever 13 inside the case and provide a spring-pressed engaging hook-lever 36', pivoted at 41, lever 36' being adapted to catch the end 15 of lever 13. With this construction the hook is so formed that when the end of lever 13 is inserted it will stand directly above the pivot, and the hook will thus form a rigid bearing for the end of the lever, corresponding to the bottom of notch 35, Fig. 2, to turn lever 13 on its pivot 14 when the head is depressed. The lower end

36" of this hook-lever stands above ribs 42' on frame 1 in such position as to form a stop to arrest upward movement of the head at the proper point. When the head is placed in the case, the hook-lever automatically moves to allow ribs 42' to pass below it. Preferably the hook-lever has a transverse extension 43, carrying an arm 44, also adapted to engage the rib 42' at the other side of the case on an edge of frame 1, a clearance 42" being provided to allow up-and-down movement of the head within desired limits.

We claim—

1. In an automatic numbering-machine, the combination of figure-wheels having ratchet-wheels, stepped pawls, which when set for advancing said wheels are a short distance behind the ratchet-teeth to be operated on, means for moving the pawls for advancing the ratchet and figure wheels, and means consisting of a movable period-plate in position to be moved by the stepped-pawl mechanism before the pawls can engage the ratchets of the figure-wheels to be moved for preventing the beginning of rotation of the figure-wheels until said wheels have moved a distance from the plane of the printed paper.

2. The combination of a numbering-head having a frame, an axis, figure and ratchet wheels thereon, a pawl-plate and stepped pawls, the longest pawl being wider than its ratchet, a loose toothed wheel 25 on the axis beside the ratchet of the unit-wheel in position to be moved by said longest pawl, the teeth of wheel 25 having a different radial or angular arrangement than the ratchet-wheel teeth, whereby when the pawl-plate is moved so that one or more of the pawls will on their return movement advance figure-wheels, the longest pawl first engages a tooth of wheel 25 before reaching a tooth of the ratchet-wheel, and means for retarding movement of wheel 25.

3. In a numbering-machine having figure-wheels, stepped pawls and means for moving the pawls, a movable period-plate having a downwardly-extending cam or tooth, a loose toothed wheel between the teeth of which the cam is adapted to fit, and a tooth of the stepped pawl adapted to engage a tooth of the loose wheel before moving the first figure-wheel.

4. In a numbering-machine having figure-wheels, ratchets and stepped pawls for advancing them, said pawls when set for advancing the ratchets and figure-wheels being a short distance behind the ratchet-teeth to be engaged, a lever for moving said pawls, a period-plate, and means operated by movement of said lever for raising the period-plate before said pawls reach ratchet-teeth to move figure-wheels, thereby retarding the latter.

5. In a numbering-machine having figure-wheels and stepped pawls for advancing them, a lever for moving said pawls, a period-plate, a spring normally holding it on a level with the figure-wheels, and means operated by movement of said lever for raising the period-plate against tension of its spring.

6. In a numbering-machine having figure-wheels and stepped pawls for advancing them, a lever for moving said pawls, a period-plate, a spring normally holding the period-plate on a level with the figure-wheels, and means operated by movement of said lever for raising the period-plate against the tension of its spring before said pawls move figure-wheels, thereby retarding the latter, and means for guiding the period-plate in a perpendicular line.

7. In a numbering-machine having figure-wheels and means for advancing them, a period-plate normally level with the figure-wheels, means for raising the period-plate, said means acting to raise the period-plate above the figure-wheels before the means for advancing them moves the first figure-wheel.

8. The combination of a case, a numbering-head adapted to move up and down therein, a pivoted arm carried by the head and projecting therefrom, a catch connected to the case and having a hook engaging said pivoted arm on the head, said catch having a part distinct from said hook adapted to engage the head to limit outward movement thereof.

9. The combination of a case, a numbering-head adapted to move up and down therein, and a hook connected to the case and holding the head therein, said hook having a part adapted to engage the head to limit outward movement thereof, said hook having also a transverse extension with an arm 44 adapted to engage the head at the opposite side thereof.

10. The combination of a case, a numbering-head adapted to move up and down therein, a yielding hook with beveled head within the case, and an arm connected to the head in position to press back said hook and to be engaged thereby when the head is introduced into the case.

11. The combination of a case, a numbering-head adapted to move up and down therein, a rib on the head, a stop-arm adapted to be automatically moved back when the head is introduced into the case to allow the rib to pass it, and a spring for returning the stop-arm to position to engage the rib to limit its outward movement.

Signed this 16th day of August, 1897.

EDWIN G. BATES.

CHARLES SPIELMANN.

Witnesses:

HENRY DISTLER,

CHRISTOPHER PISKE.

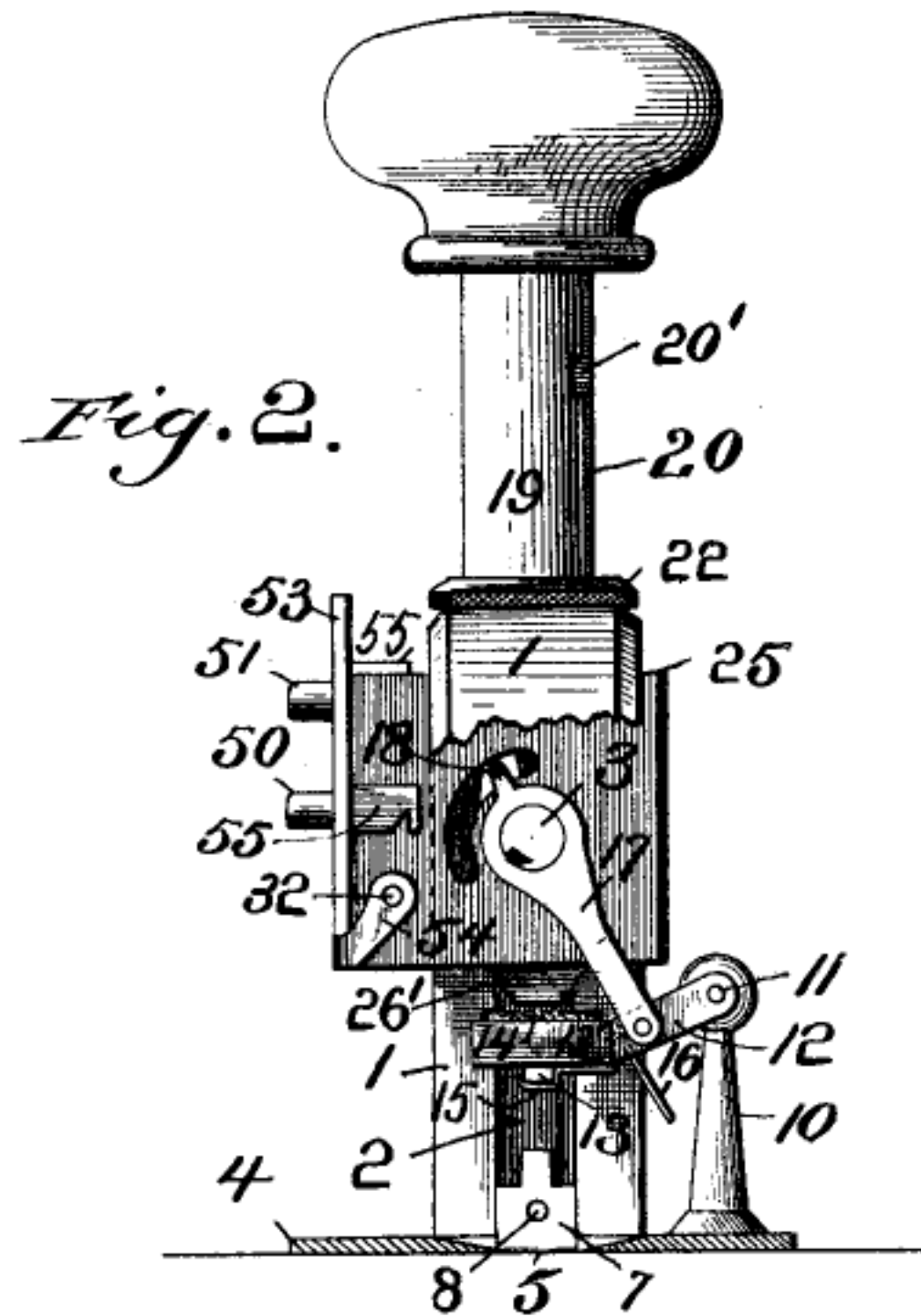
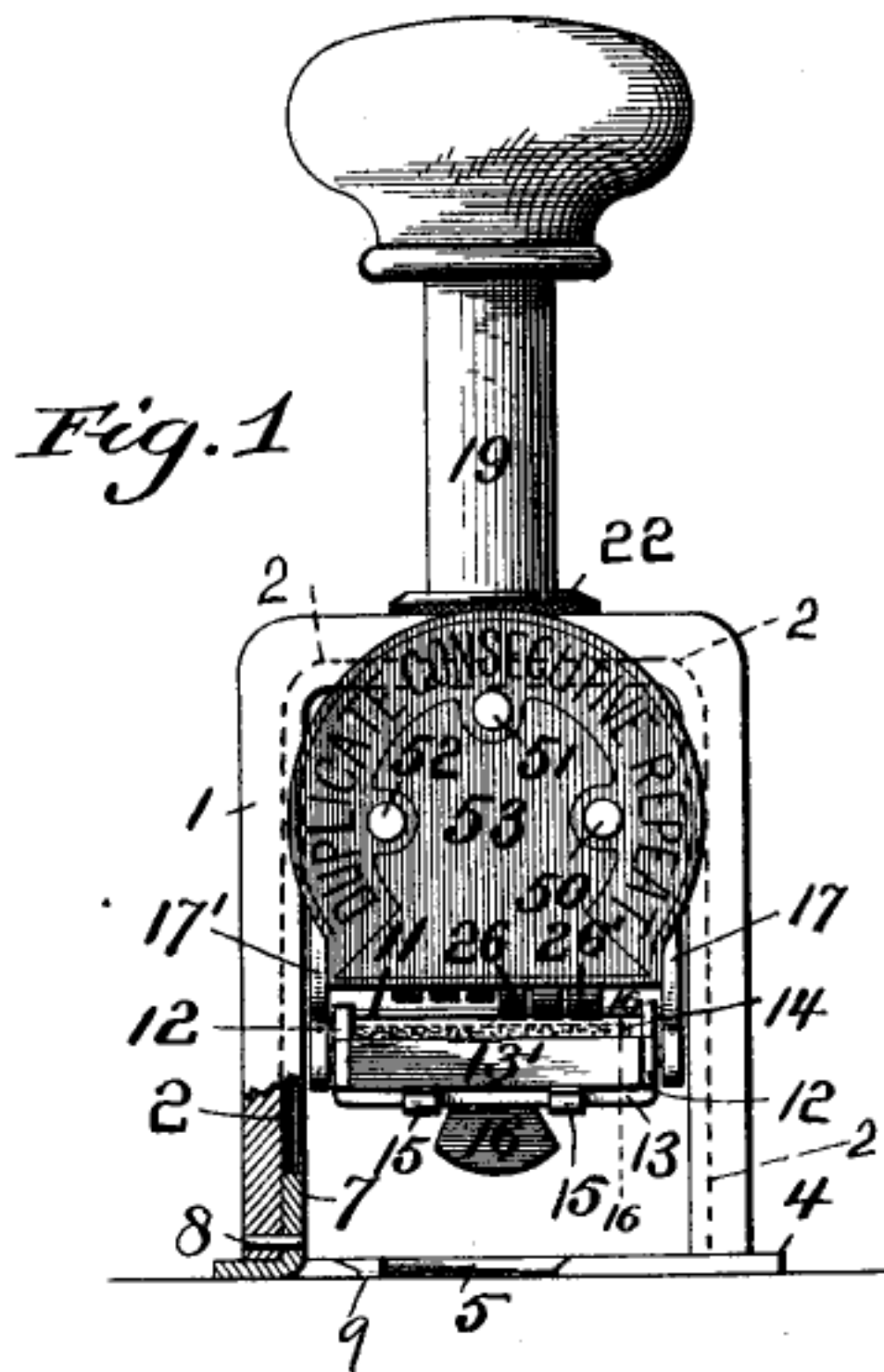
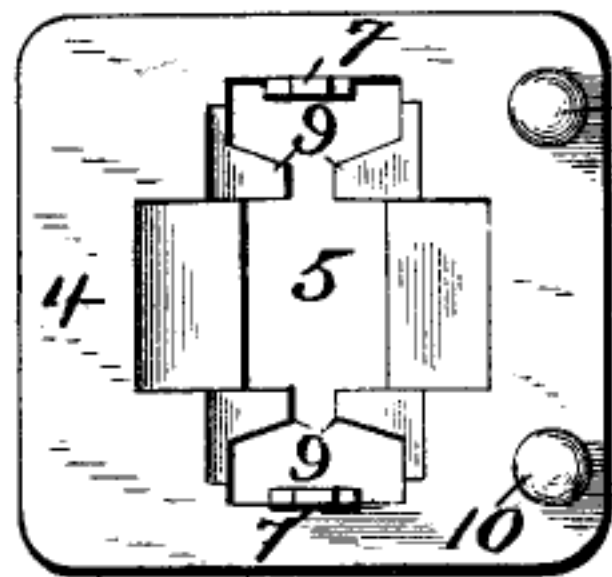
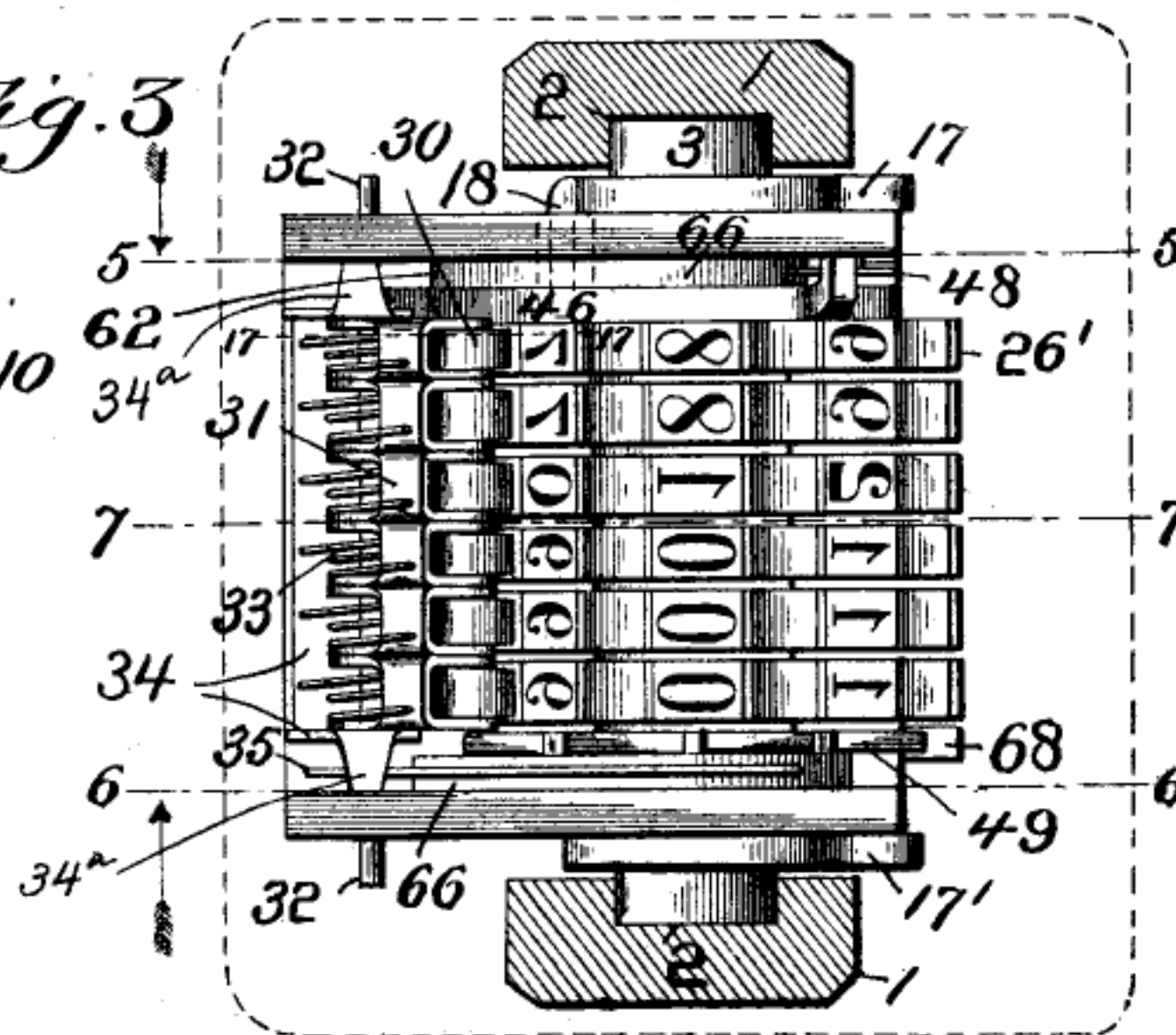
NEXT ITEM

E. G. BATES.
AUTOMATIC NUMBERING MACHINE.

(Application filed Oct. 20, 1896.)

(No Model.)

3 Sheets—Sheet 1.

*Fig. 4.**Fig. 3.*

Witnesses:

J. B. McGirr.
J. P. Appleman.

Inventor.

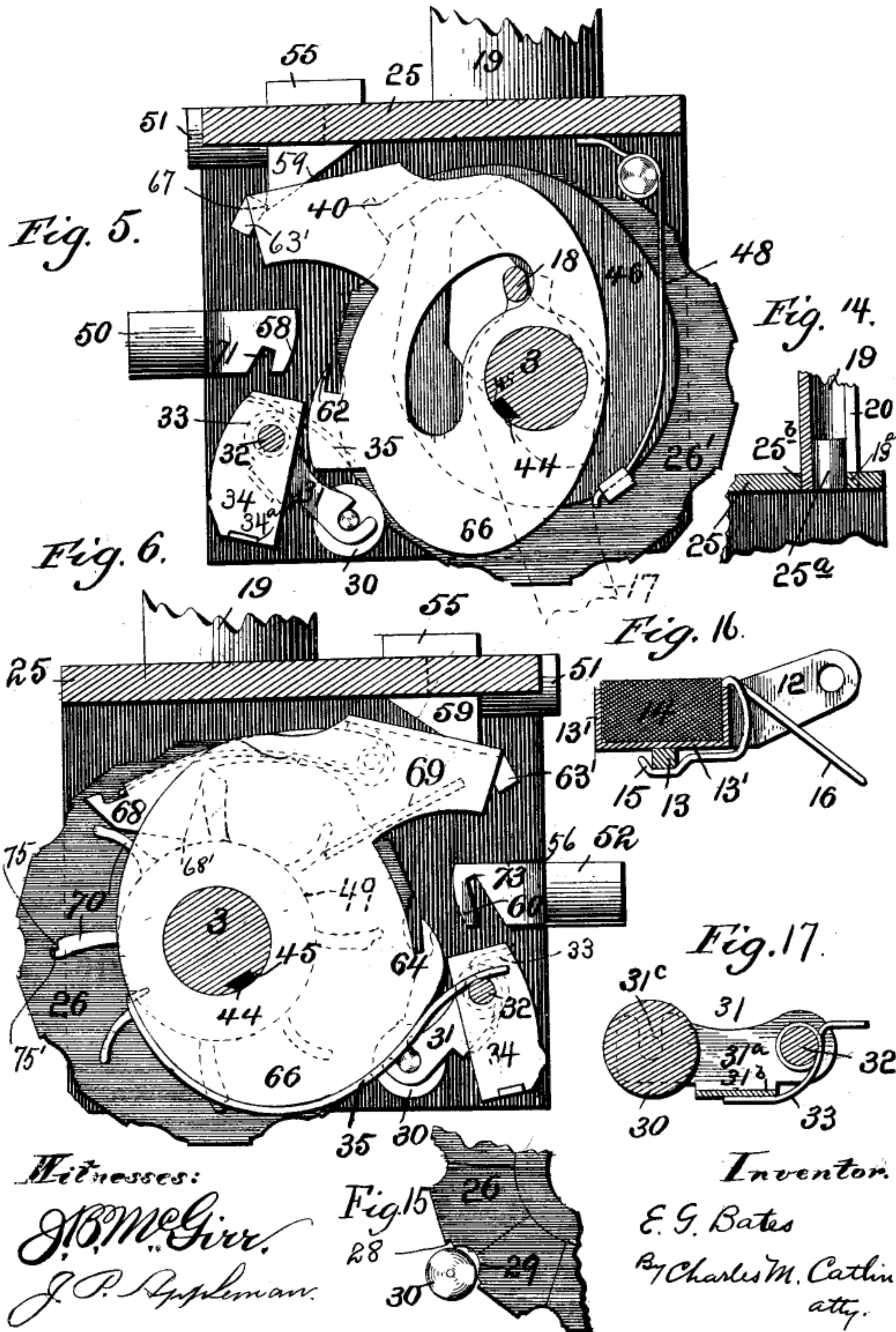
E. G. Bates,
By Charles M. Catlin
att'y.

E. G. BATES.
AUTOMATIC NUMBERING MACHINE.

(Application filed Oct. 20, 1896.)

No Model.)

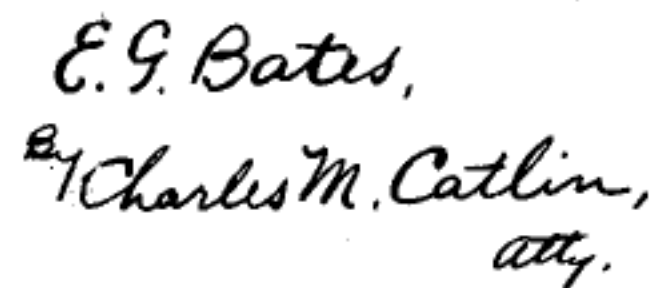
3 Sheets—Sheet 2.



AUTOMATIC NUMBERING MACHINE.

3 Sheets—Sheet 3.

(No Model.)



UNITED STATES PATENT OFFICE.

EDWIN G. BATES, OF NEW YORK, N. Y., ASSIGNOR TO THE BATES MACHINE COMPANY, OF SAME PLACE.

AUTOMATIC NUMBERING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 676,082, dated June 11, 1901.

Application filed October 20, 1898. Serial No. 609,455. (No model.)

To all whom it may concern:

Be it known that I, EDWIN G. BATES, a citizen of the United States, and a resident of New York, county and State of New York, have invented certain new and useful Improvements in Automatic Numbering-Machines, of which the following is a specification.

The object of this invention is to provide an improved numbering-machine which shall be readily adjustable to print the same number an indefinite number of times, to repeat any number twice and then automatically change to the next higher number, or to print numbers consecutively, such changes being controlled by push-buttons in reach from the outside of the machine.

The improvements relate to the frame of the machine, to the changing devices, to the moving devices for the number-wheels, to the number-wheels themselves, to the ink-pad and support, to the means for moving and holding certain of the number-wheels above the printing-plane until purposely moved forward, and to certain other parts hereinafter described, and pointed out in the claims.

In the drawings, Figures 1 and 2 are front and side elevations of the machine, parts being broken away. Fig. 3 is a bottom plan view of the printing-head. Fig. 4 is a plan view of the base or gage plate. Fig. 5 is a vertical section on line 5 5, Fig. 3. Fig. 6 is a vertical section on line 6 6, Fig. 3. Fig. 7 is a vertical section on line 7 7, Fig. 3. Fig. 8 is a front view of parts of the head, the front plate and the printing-wheels being omitted. Figs. 9 and 10 are perspectives of details. Figs. 11 and 12 are plan and sectional views of two type-wheels. Fig. 13 is a plan view of a detail. Fig. 14 is a section of a detail. Fig. 15 is a side view of a detail. Fig. 16 is a section on line 16 16 of Fig. 1, and Fig. 17 is a section on line 17 17 of Fig. 3.

The frame of the machine has an inverted-U-shaped body 1, which for cheapness and ease of manufacture is preferably made of drawn stock cut to the proper length and formed up, and has on its inner side a groove 2, in which the ends of the non-rotary main shaft 3 can slide up and down. In manufacturing these bodies 1 the stock is drawn in

bars of long lengths of uniform cross-section and with a continuous groove in one side. To form the body from such long bars it is only necessary to cut from them short bars and bend them to U shape and to form a hole for the handle-tube. Groove 2 is shown extending the whole length of the body 1 in dotted lines in Fig. 1. The base or gage plate 4 has the usual central opening 5, through which the machine prints. In line with the opening at each end are vertical ears 7, being integral with the base-plate, as shown. Said ears fit into the ends of groove 2, and are secured by pins 8, and form a positive stop for the head just after the printing-wheels press the paper, preventing injury to the numbering-wheels by pressure against the gage-plate. In cutting the plate to form the ears fingers 9 may be left at the ends of the opening 5 to rest on the paper while the machine is printing.

To the base-plate, at a distance at the rear side of body 1, are secured standards 10 to support the pin 11, on which are pivoted arms 12, which are connected by a cross-piece 13, preferably rectangular in cross-section and forming a support for the ink-pad holder 13' and pad 14. Standards 10, distinct and separate from body 1, are required because of the uniform cross-section of said body, there being no projections from the body to form pivot-supports as usual in numbering-machines. Said pad 14 consists of a U-shaped piece of sheet metal, from one edge of which project two fingers which are bent down and forward to form springs 15, which embrace cross-piece 13 to hold the pad-holder in position. By the support 13 and springs 15, embracing it, the pad-holder can be placed and held in three different positions—first, in position to ink the wheels; second, in position to reink the pad, (*i. e.*, ninety degrees from first position, the pad facing outward,) and, third, in inverted position for removal. From the same edge of the holder projects a third finger, which is bent down and back and forms handle 16, by which the holder can be moved. The arms 12 form or may form the ends of the pad-holder.

To the arms 12, between the pivot and the ink-pad, are pivoted arms 17 17', which have

bearings on and are adapted to turn on shaft 3 and as shaft 3 descends in the act of printing push the pad from under the printing or numbering head. The arm 17 has a projecting inwardly-bent finger 18, which moves the stepped pawl-plate, as hereinafter described.

The handle-tube 19 has a longitudinal slot 20, with a side notch 20' below the handle, and contains a spring 21, the top of which presses against the handle and the lower end of which bears on body 1 through ring 22, which for this purpose has a central part 23 connected to the ring by a neck 24, which is adapted to travel in the tube-slot. When tube 19 is depressed until notch 20' is in line with neck 24, ring 22 can be turned to bring said neck into the notch to lock the tube down while the pad is being reinked. The tube 19 supports the printing-head, which has a U-shaped body 25, in which are supported shaft 3, the numbering type-wheels 26, &c.

While each number type-wheel may be made in one piece, as usual, I propose, for economy and ease of manufacture, to make each wheel in three or more sections, preferably ten sections, one for each character "0" to "9," each section 27 having, besides its number-type, a ratchet 28, with which the number-wheel-moving pawl is adapted to engage, and curved parts 29, which form bearings for rollers 30, carried by arms 31, pivoted on pin 32 and each pressed against its wheel by a spring 33, also on pin 32. Preferably rollers 30 are of larger diameter than the circle of curves 29. (See Fig. 15.)

34 is a holder, also on pin 32, between the legs of which the several arms or holders 31 are confined. Ears 34^a, which bear against the sides of the numbering-head, maintain holder 34 in such position on pin 32 that the individual arms 31 and rollers 30 will be held in alinement with their own number-wheels. One end of each of the springs 33 pressing against the upper front edge of frame 34 presses the lower ends of the legs of said frame against the front plate, preventing rattle or movement of the frame. This position of the frame is shown in Figs. 5 to 7, although the front plate is there omitted.

35 is a spring which tends to throw frame 65, hereinafter described, to its upper position.

The rollers 30 hold the wheels in the position to which they are normally set until they are purposely advanced. The sections 27 have curved grooves which when the sections are assembled form a continuous groove or depression, into which is inserted and secured a ring 36. Instead of a ring and a groove a ring 37 may surround the shaft-opening, being riveted to each section by rivets 38.

The number-wheels are adapted to turn on the non-rotary shaft 3 and have the usual deep notches 39 to admit the stepped moving pawl-plate 40 at the close of each rotation of a wheel to advance the next wheel one space.

When the number-wheels are formed of sev-

eral sections, the deep notches 39 are made by removing parts of the meeting sides of two contiguous sections, as shown in Figs. 11 and 12. The first or units wheel 26' has a circular or all-round bearing for shaft 3 (see Fig. 12) and always prints when the head is depressed. The shaft-openings in the other wheels are not wholly circular, but are cut away on one side, as seen at 42, Fig. 11, to allow said wheels at a predetermined part of their rotation to be bodily moved upward a short distance, so that when the head is pressed down to print said retracted wheels will not reach the printing-surface. The cut-away portions should be in such position that the wheels will be retracted (pressed back by springs 33) when the "0" types or numbers are directly below shaft 3. Said wheels, except the units-wheel, have toothed parts 43, which to allow the wheels to be thus retracted enter the groove 44 in the lower side of shaft 3 but a little in advance of a vertical plane through the axis of shaft 3. When a sectional wheel is used, tooth 43 will be formed in one of the segments, as seen at 43'. When either of the toothed wheels is advanced by the stepped moving pawl-plate, the wheel is pushed outward a little by part 45 acting as a cam and drops into position without attention or adjustment, so that said wheel will print when the head is depressed.

I am aware that numbering-machines have been described having a shaft with an undercut groove and printing or number wheels with drop-ciphers having hooks adapted to engage the groove and to be held back and automatically released and moved forward when the wheel is advanced. The present invention differs from these in that the wheels are bodily moved back and then moved forward when needed, thus dispensing with the somewhat complicated and delicate drop-cipher, with its springs, pins, &c.

The moving pawl-plate 40, referred to above, is supported by a right-angled wing 46, which has an opening 47, through which passes shaft 3. As shown in Fig. 10, the opening is of such shape that the wing can move transversely to the shaft. The wing is normally pressed in the direction to move pawl-plate 40 to engage with the number-wheels by spring 48. The upper side of the opening 47 is inclined, as seen in Figs. 2, 5, and 10. The effect of this is that when finger 18 (which passes through the curved slots in the head-body and in the wing of frame 65) moves against it during the forward movement of the head it exerts pressure in two directions—radially and circumferentially—and the construction is such that it raises pawl-plate 40 in a line radial or nearly radial to the number-wheels during the first part of its movement, so that it will not rub over the face of the type wheel or wheels to be advanced, and when the lower side of the opening reaches the under side of the shaft the pressure of finger 18 carries said pawl-plate forward in

an arc to engage the next ratchet-tooth. The wing 46 of the pawl-plate stands between wing 66 and the first numbering-wheel and is thereby steadied and held in proper position. It is evident that if the pawl-plate wing turned around its axis without any resistance the finger 18, acting on the upper side of opening 47, might turn the wing without giving it a radial movement against the tension of spring 48. In practice the wing 66 and the numbering-wheel, by friction against wing 46, form a practical means for slightly opposing the turning of the wing and the consequent circumferential movement of the pawl-plate, at the same time allowing the wing to move both radially and on its axis under pressure from finger 18. When the head moves up under influences of spring 21, the pawl-plate drops radially to engage the ratchet and is moved in a reverse arc by reverse movement of finger 18, advancing the wheel or wheels engaged one space. The pawl-plate I term a "floating" pawl-plate, as distinguished from a plate having a fixed pivoted connection.

The changing devices by which the machine can be instantly converted from consecutive, duplicate, or repeat (continuous) numbering to either of the others consists of a toothed wheel 49, loose on shaft 3, and which can be moved to either of three positions by pressing in one or the other of the push-buttons 50, 51, 52, which project through the front or index plate 53 and are movable directly in and out through the plate, which is secured to the head by reversely-bent perforated ears 54, through which the pin 32 (above mentioned) passes, thus making extra parts for securing the index-plate unnecessary. Wheel 49 is a means controlled by frame 65 for determining the operation or non-operation or the order of operation of the stepped pawl-plate. The push-buttons (one of which is always in, the others being out) have behind the front plate bifurcated bodies 55, adapted to straddle the body 25. Notches 56 are formed in body 25, in which the bodies 55 are placed. Behind each of the bodies 55, in a hole in body 25, is a spring 57, tending to press the push-buttons out. The inner leg of each bifurcated body forms or is provided with a wedge portion 58 59 60 and, just above, a detent-notch. The outer legs of bodies 55 are merely to assist in holding the bodies in place. The wedge parts when pushed in cooperate with the corresponding wedge or beveled parts 62, 63, and 64, forming parts of a frame 65, with wings 66, having bearings on shaft 3. In Fig. 9 incline 63 terminates at the outer edge of the cross-piece of frame 65. In Figs. 5 and 6 said incline is extended outward beyond said edge, as at 63', to show more clearly the location of the incline in relation to its operating-wedge. When frame 65 is made with two cross-pieces 65^a and an opening 65^b between them, the rear cross-piece should be so arranged as to

allow the edge of incline 63 to enter notch 67. (See Fig. 7.) Each push-button wedge when pressed in turns frame 65 forward its complete throw; but such wedge is formed to allow the frame to turn reversely a short distance, different for the different wedges, to catch each wedge as it is pushed in and hold it in and to hold the frame in a definite position until another of the wedges is pushed in. Wedge 59 has a shallow notch 67, which allows the rear edge of incline 63 to drop back into it, as in Fig. 7. This leaves frame 65 in such position that pawl 68, the angle 68' of which is toward wheel 49 and normally stands between two of the teeth thereof, will have moved wheel 49 to such position that tooth 69 on the pawl-plate at each operation of the machine drops into one of the spaces between teeth of wheel 49, dropping in front of one of the teeth 70, (which teeth may be curved, as in Fig. 6, or straight, as in Fig. 10;) but the movement of the pawl is not sufficient to move wheel 49 far enough to allow pawl 68 to drop between the next pair of teeth. Wheel 49 is moved forward a little when finger 69 strikes it, but is brought back to position by spring-pressed pawl 68 as the head is pressed down. Thus pawl-plate 40 is allowed to engage and move one or more number-wheels at each depression of the head printing numbers consecutively. If now the "repeat" push-button 50 and its wedge be depressed, it first turns frame 65 forward, releasing the "consecutive" wedge, which is thrown out by its spring 57. The wedge just pressed in has a notch 71, deeper than notch 67, which allows hook 62 to enter under influence of spring 35, holding the push-button and wedge depressed and allowing the frame 65 to move reversely a little farther than in the first case. In this operation pawl 68 will move far enough to move wheel 49 to such position that tooth 69 will not enter between the teeth of wheel 49, but will rest on the extreme outer end of one or other of the teeth 70 of said wheel 49. This holds up the pawl-plate, allowing tooth 18 when it swings to the other side of opening 47 during the upward movement of the head to enter notch 72 before finger 69 is carried from tooth 70 by the further movement of tooth 18, which prevents pawl-plate 40 reaching the number-wheels to turn them, whereby the same number will be printed at each depression of the head. Finger 18 will not enter notch 72 except when tooth 69 rests on the extreme end of one of the teeth 70. At other times the notch has dropped below the finger before the latter reaches that side of the opening. If now the "duplicate" button and wedge be depressed, frame 65 is first thrown forward, releasing the repeat-wedge, which is thrown out by its spring. The hook 52 then drops back into notch 73, deeper than notch 71, moving wheel 49 into one of two positions—viz., if the last time the machine was used for duplicating, the last number set up was printed twice be-

fore one of the other buttons was depressed and wheel 49 would be in position to receive tooth 69 on a step 75; but if said number had only been printed once wheel 49 would be in position to receive tooth 69 at 74. In the latter case pawl-plate 40 is allowed to operate, but in the former case not, since during the reverse movement of pawl-plate 40 tooth 69 rests on one of the lower steps 75 of a step-tooth 70, preventing operation of pawl-plate 40, and tooth 69 by pressing against the side 75' of the upper step of said step-tooth turns the wheel 49 reversely as far as pawl-plate 40 moves, whereby each number set up is printed twice, and then the following number is set up.

The upper step of the stepped teeth makes these teeth of the same length as the alternate non-stepped teeth. Said step also enables the tooth 69 when resting on the lower step to turn wheel 49 during reverse movement of the pawl-plate. The lower step 75 when tooth 69 rests thereon allows the pawl-plate to approach, but not to reach, the type-wheels to cause duplicate numbering, as above described.

The wheel 49 is not moved a full space from its position by pawl 68 except in setting the machine for duplication. Evidently the number of push-buttons and wedges used can be varied.

The changing devices described are simple, not liable to get out of order, and are positive in operation. The entire machine is put together without the use of screws, and the number of parts is smaller than heretofore.

The arms 31, hereinbefore referred to, are stamped up from H-shaped blanks and have their two parallel members 31^a extending edgewise from the cross member 31^b. At one end of the parallel members are pivot-holes, and at the opposite end are bearings, preferably open notches 31^c, for the trunnions of the rollers 30. Said notches face the wheels against which the rollers rest, and the rollers are thus held in place without being positively secured to their holders. One end of the coiled spring which presses the roller-holder forward rests on the cross member of the holder, as shown.

Arm 17, with its finger 18, it will be seen, has three functions—to move the pad-holder, to move the stepped pawl-plate, and to hold the stepped pawl-plate away from the number-wheels when finger 18 engages notch 72 during duplicate printing.

Tube 19 is secured in a seat 25^b in body 25. The seat on one side has a lug 19^a extending into slot 20, insuring a strong connection and the proper positioning of said tube. A plug 25^a may be forced to the bottom of the tube within the seat to strengthen the connection between the tube and body.

I claim—

1. The combination, in a numbering-machine, of a movable head carrying a shaft, numbering-wheels, a stepped moving pawl-plate therefor having both radial and circum-

ferential movement relative to the numbering-wheels, a wing extending from the pawl-plate to the shaft and having an opening longer than the diameter of the shaft to allow the wing and pawl-plate to move radially, a spring normally forcing the pawl-plate toward the shaft, means opposing the circumferential movement of the pawl-plate, and means for moving the pawl-plate when the head is moved, substantially as described.

2. The combination, in a numbering-machine, of a movable printing-head carrying a shaft, printing number-wheels thereon, and means for moving the wheels on the shaft consisting of a stepped pawl-plate having a wing with an opening for, but larger than, the shaft, an arm having a bearing on said shaft, and a finger carried by said arm and extending into said opening in the wing of the pawl-plate, said arm and finger being moved by movement of the printing-head and moving the pawl-plate.

3. The combination, in a numbering-machine, of a drawn metal body grooved throughout its length, and of uniform transverse cross-section throughout its length, a handle and a head movable in the body, said head having a main shaft the ends of which project into said groove, numbering or printing wheels on said shaft, a pawl-plate for moving the wheels, and means for moving the pawl-plate.

4. A stepped pawl-plate having a right-angle wing, an elongated shaft-opening therein said opening having an operating edge inclined toward the shaft and adapted to co-operate with a moving finger as described.

5. The combination, in a numbering-machine, of a movable head having a shaft, printing-wheels thereon, a floating stepped pawl-plate having a bearing on the shaft but movable transversely to the shaft to carry the pawl-plate from and toward the peripheries of the wheels, an ink-pad holder, and operating-arms with bearings on the shaft and pivoted to the ink-pad holder, one of said arms having a finger coöperating with the pawl-plate to move it.

6. The combination, in a numbering-machine, with a shaft, number-wheels thereon, and a pawl-plate for moving them, of changing devices for changing the machine from duplicate, consecutive or repeat printing to either of the other, consisting of a toothed wheel loose on said shaft, a frame or body, as 65, a pawl moved by said frame and moving said toothed wheel, means for moving said frame, and means coöperating with said toothed wheel and determining the operation of the pawl-plate.

7. The combination, in a numbering-machine, with a shaft, number-wheels thereon, and a pawl-plate for moving them, of changing devices for changing the machine from duplicate, consecutive or repeat printing to either of the other, consisting of a toothed wheel loose on said shaft, a body pivoted on

said shaft and controlling the position of said toothed wheel, wedges for moving said frame, and means cooperating with said toothed wheel and determining the operation of the number-wheel pawl-plate.

8. The combination, in a numbering-machine, with a shaft, number-wheels thereon, and a pawl-plate for moving them, of changing devices for changing the machine from duplicate, consecutive or repeat printing to either of the other, consisting of a toothed wheel loose on said shaft, a frame with bearings on said shaft, as 65, controlling the position of said toothed wheel, wedges for moving said frame, wedge-operating push-buttons extending to the outside of the machine, and means cooperating with said toothed wheel and determining the operation of the number-wheel pawl-plate.

9. The combination, with the body of a numbering-head having suitable notches in an edge thereof, of wedges with legs adapted to straddle said body and to move in said notches, springs behind said wedges, an index-plate carried by the head through which the wedges extend and by which they are held in place, and a changing device for the number-head moved by said wedges.

10. The combination with the wheels and pawls of a numbering-machine, and means for automatically operating said pawls by the act of printing, of means controlling the operation or non-operation of said pawls, an index-plate, several push-buttons projecting through said plate and movable in and out by force applied thereto at right angles to said plate and controlling said means controlling the operation or non-operation of the pawls.

11. The combination with the body of a numbering-head, including numbering-wheels, means for moving the wheels, and changing devices for changing the numbering from one order to another, said changing devices being operated by push-buttons movable in and out by force applied thereto at right angles to the face-plate, and a face-plate through which the push-buttons project.

12. The combination, in a numbering-machine, of numbering-wheels, a moving pawl-plate therefor, means for changing the order of printing including several push-buttons and wedges, one of which is normally pushed in and locked, and the others of which are out, said lock being disengaged by inward movement of another of said push-buttons, and means for locking in the push-button last operated.

13. The combination with the shaft, numbering-wheels, and stepped pawl-plate, of frame 65 pivoted on the shaft and having beveled parts, cooperating wedges adapted to move said frame, the wedges when pushed in being held by said frame, and a wheel also on said shaft the position of which is controlled by said frame, and which in turn controls the stepped pawl-plate.

14. The combination with the shaft, num-

ber-wheels, and stepped pawl-plate, of frame 65 pivoted on the shaft and having beveled parts, cooperating wedges adapted to move said frame, said cooperating wedges having notches of varying depth, means on the frame to engage the notches of the wedge pressed in, holding the wedge in and the frame in a definite position, and means controlled by the frame determining the operation or non-operation of the stepped pawl-plate.

15. The combination, in a numbering-machine, of a head adapted to be reciprocated or moved to print, a shaft immovable in the head, several numbering-wheels thereon, all of which wheels except the first or unit wheel being adapted to be moved back bodily on said shaft, and means for automatically advancing said wheels into printing position when needed.

16. The stepped pawl-plate having a wing with a shaft-opening larger than its shaft, a finger operating on the wing to move the pawl-plate, and said shaft-opening having in one side a notch into which the finger can enter during one operation to hold the stepped pawl-plate from the numbering-wheels.

17. The combination, in a numbering-machine head, of a shaft, printing or numbering wheels rotatable thereon, said wheels or some of them being bodily movable back from printing position to a position eccentric to the shaft, and means operated by turning such wheels to move them to a position concentric to the shaft, whereby they will be brought into printing position.

18. A printing-wheel having a shaft-opening enlarged at one side whereby the wheel can take a position eccentric to the shaft, a tooth projecting inwardly in the enlarged part of the opening, in combination with a shaft having a groove in position to admit said tooth.

19. The combination, in a numbering-machine, of a grooved shaft, printing-wheels thereon having enlarged shaft-openings whereby they are movable bodily out of the printing position or plane, teeth on the wheels adapted to enter the groove, the teeth being automatically removed when their wheels are turned, and the wheels moved forward to the printing-plane.

20. A printing number-wheel consisting of several segments of a circle in a common plane and together forming a complete wheel, numerals on the periphery of the segments, and means for holding the segments permanently in the form of a wheel.

21. A printing number-wheel consisting of several segments of a circle in a common plane and together forming an entire wheel, numerals and ratchet-teeth on the periphery of the segments, and a ring with means for securing it to the segments, holding them in the form of a wheel.

22. A printing number-wheel consisting of several segments of a circle in a common plane and together forming an entire wheel, a character and a ratchet tooth on each segment, a

depression in the segments, and a ring secured therein to hold the segment in wheel form.

23. A printing number-wheel consisting of several segments of a circle in a common plane and together forming an entire wheel, a character and a ratchet tooth on each segment, a depression in the segments, and a ring riveted to each segment to hold the segments in wheel form.

24. A printing-wheel composed of several segments a grooved shaft therefor, the wheel having a shaft-opening larger than the shaft on one side, and a tooth on one of said segments adapted to enter said groove.

25. A printing-wheel composed of segments secured together in a common plane and together forming an entire wheel, ratchet-teeth on the periphery of the wheel for the moving pawl, and a deep notch formed by removing parts of two adjoining segments.

26. The combination with number-wheels bodily movable on their shaft back from printing position, of separate holding-rollers for the wheels, a separate spring for each roller and pressing the rollers against the wheels in the direction to thus move them back.

27. The combination with a numbering-wheel, having printing characters and roller-bearings around its periphery, of a spring-pressed roller-holder having two parallel members adapted to be pivoted at one end, and notched at the other end on the side toward the numbering-wheel, and a roller between the parallel members and journaled in said notches.

28. The combination of several wheels, rollers pressing thereon, roller-holders, a holder for the roller-holders, a pin extending through all the holders and a spring for each roller-holder located on the same pin with one end pressing on the roller-holder and the other end pressing on the other holder.

29. The combination with the U-shaped body of a numbering-head, of a face or index plate on one side of said body and having backwardly-bent ears and a pin passing through the two parallel limbs of said U-shaped body and extending on both sides of the body through said ears, numbering-wheels carried by said body, and means bearing against each of said wheels separately to hold them, said means being pivoted on said pin.

30. The combination with the body of a numbering-machine consisting of a U-shaped strip with a groove on the inner side of each leg, and a numbering-head movable in said body and having projecting parts movable in

said grooves, of a base-plate having a printing-opening, ears extending up from the base-plate into said groove, said ears being of such length as to serve as stops for the head preventing the number-wheels striking the base-plate, and means for securing the legs and ears together.

31. The combination of an ink-pad holder, a support therefor, springs projecting from the upper edge of the holder down and under the holder and engaging said support.

32. The combination of an ink-pad holder, a support therefor, springs projecting from the holder and engaging said support which is of such shape in cross-section as to hold the pad-holder in either of several positions, as described.

33. The combination of pivoted arms, a cross-piece between them, a pad-holder on said cross-piece, and one or more springs engaging the cross-piece and holding the pad-holder thereon.

34. A pad-holder of channel shape with spring-fingers extending from an upper edge thereof and under the holder as described.

35. The combination with a pad-holder of channel shape, of a support therefor having pivoted arms which close the ends of the pad-holder.

36. The combination in a numbering-machine, of a U-shaped body grooved on its inner side and of uniform cross-section throughout its length, a head movable in the body, said head having numbering-wheels, and means for moving them, an inking-pad holder and pad, a base-plate secured to said body, posts secured in the base-plate at one side of said U-shaped body and distinct from it, arms pivotally supported by said posts, and means connecting said arms with the head whereby the pad is moved by movement of the head.

37. The combination with a reciprocatory tube, as 19, having a longitudinal slot and a notch 20', and a body through which the tube moves, of a ring resting on said body and having a neck or extension passing into the slot, said ring being free to turn on the tube to bring said neck into and out of the notch, locking the tube in a certain position or releasing it.

Signed this 10th day of October, 1896.

EDWIN G. BATES.

Witnesses:

JOHN E. CONLEY,
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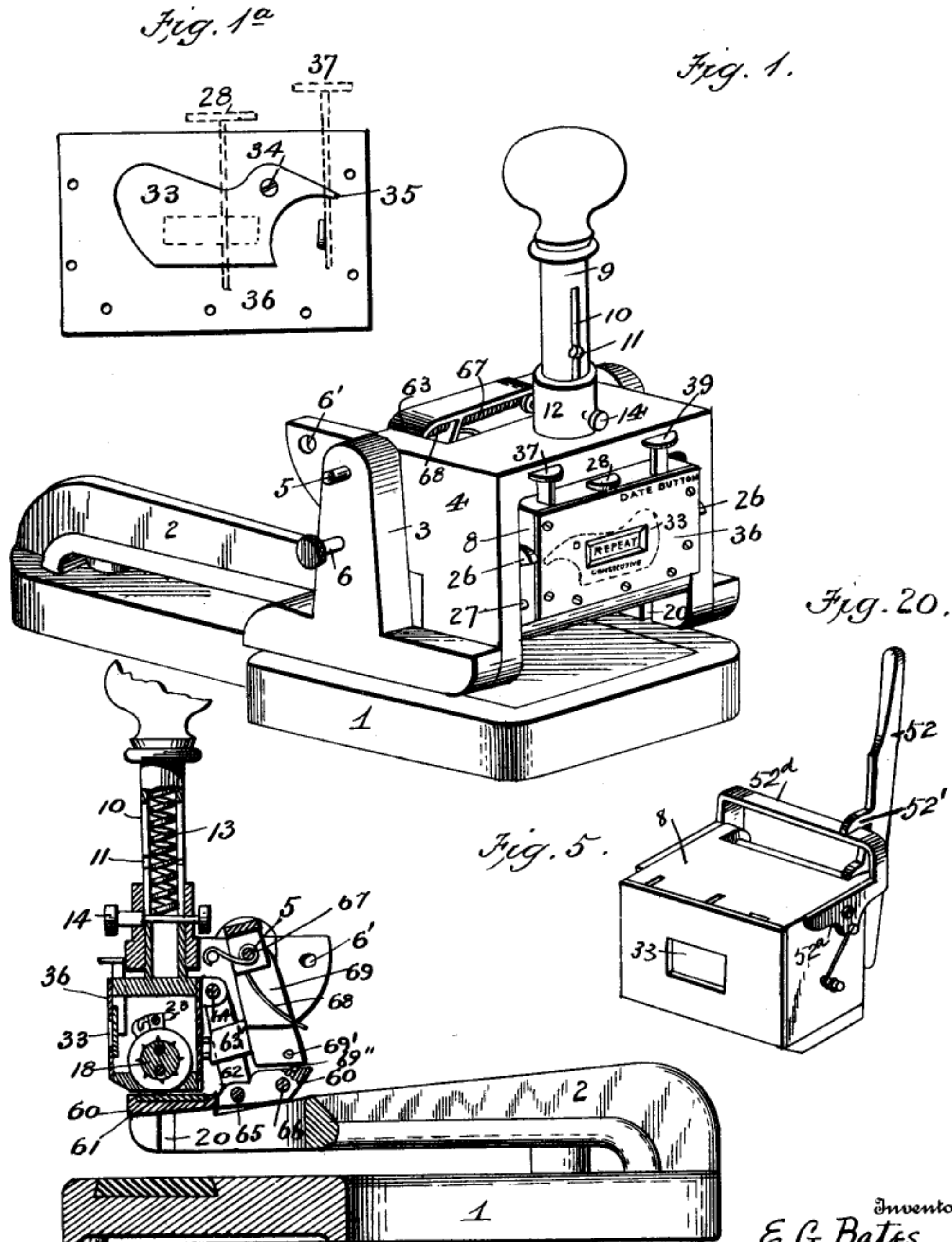
NEXT ITEM

E. G. BATES.
NUMBERING AND DATING MACHINE.

(Application filed Aug. 18, 1898.)

4 Sheets—Sheet 1.

(No Model.)



Witnesses
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E. G. BATES.
NUMBERING AND DATING MACHINE.

(Application filed Aug. 18, 1898.)

4 Sheets—Sheet 2.

(No Model.)

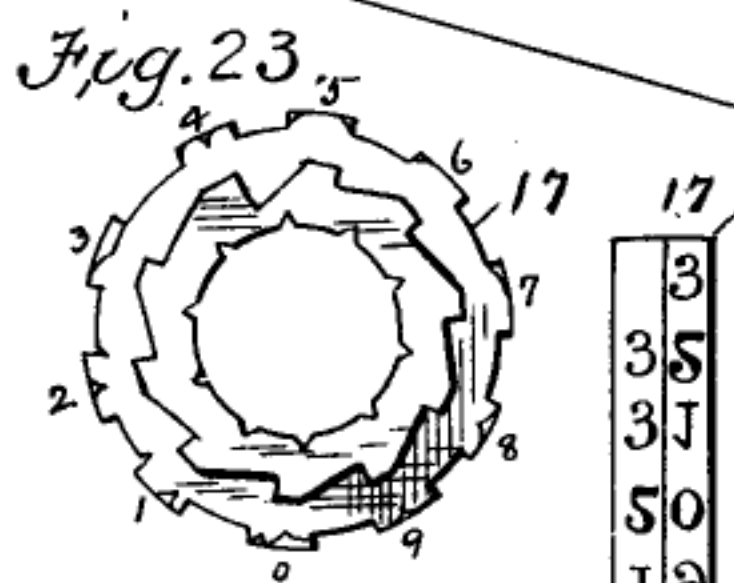
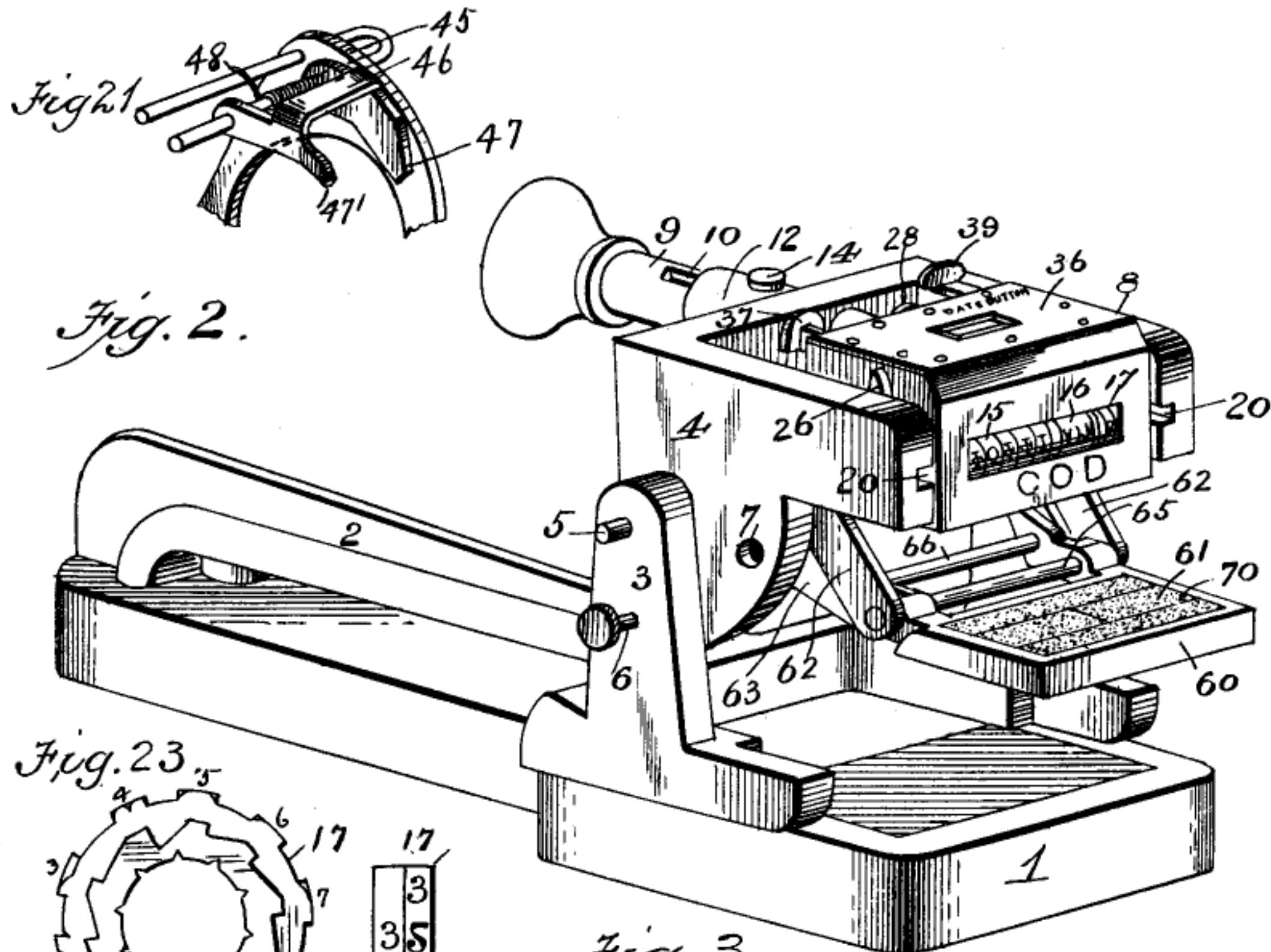


Fig. 25.

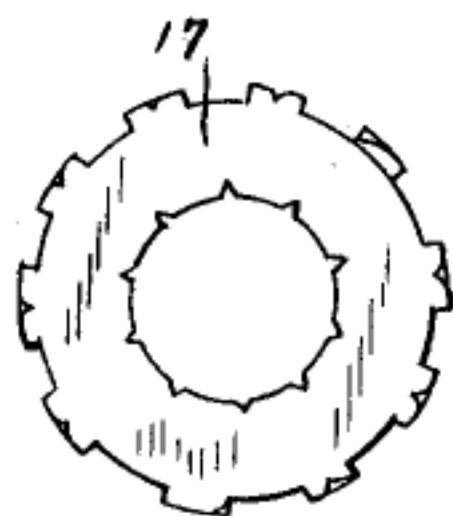
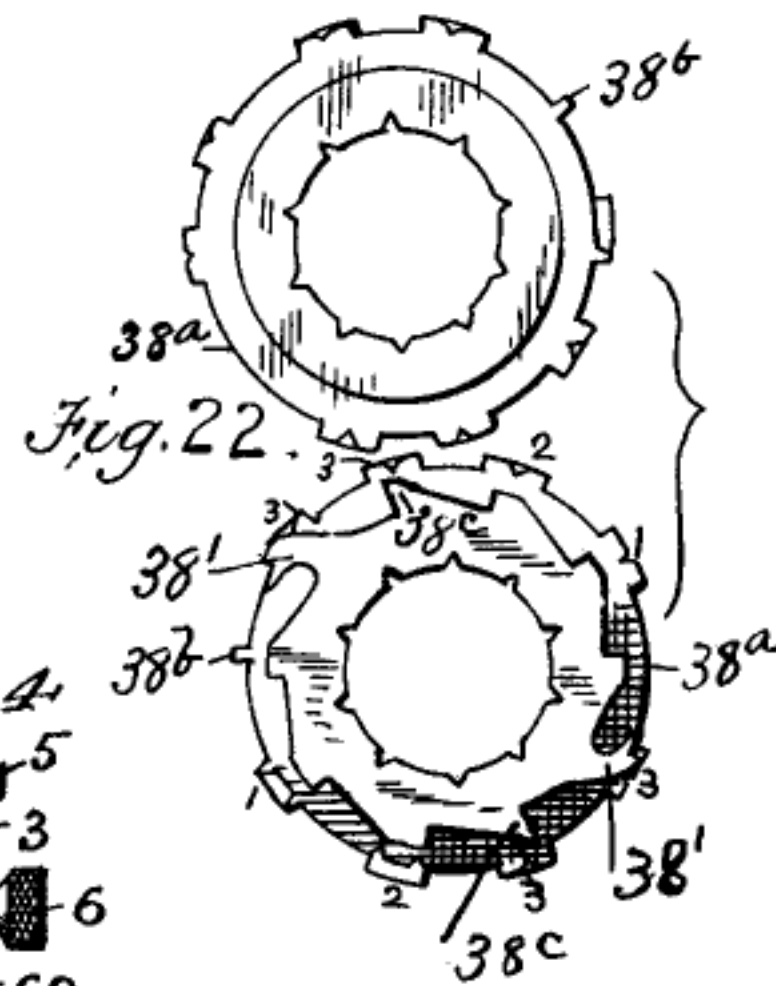
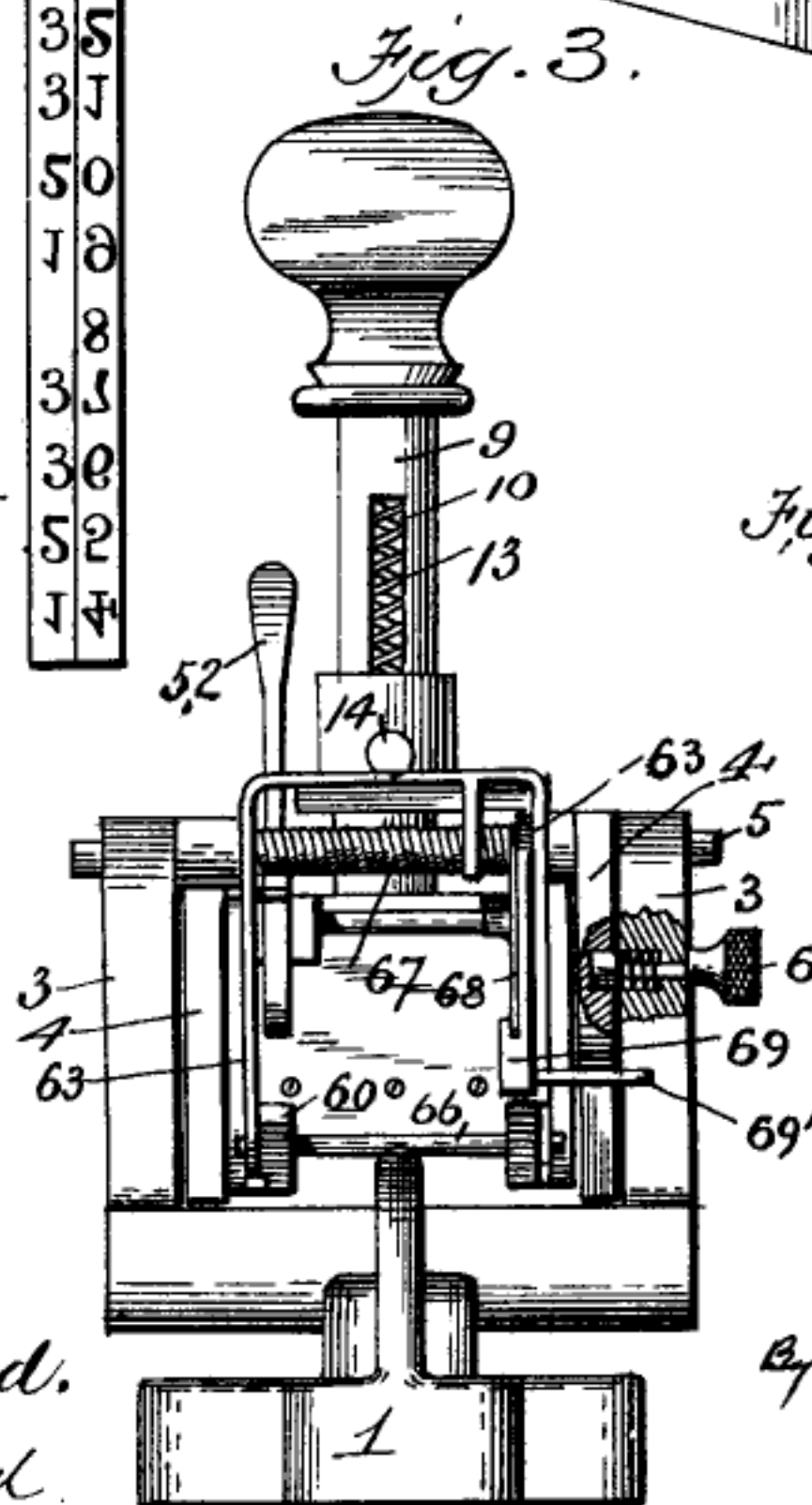


Fig. 24.

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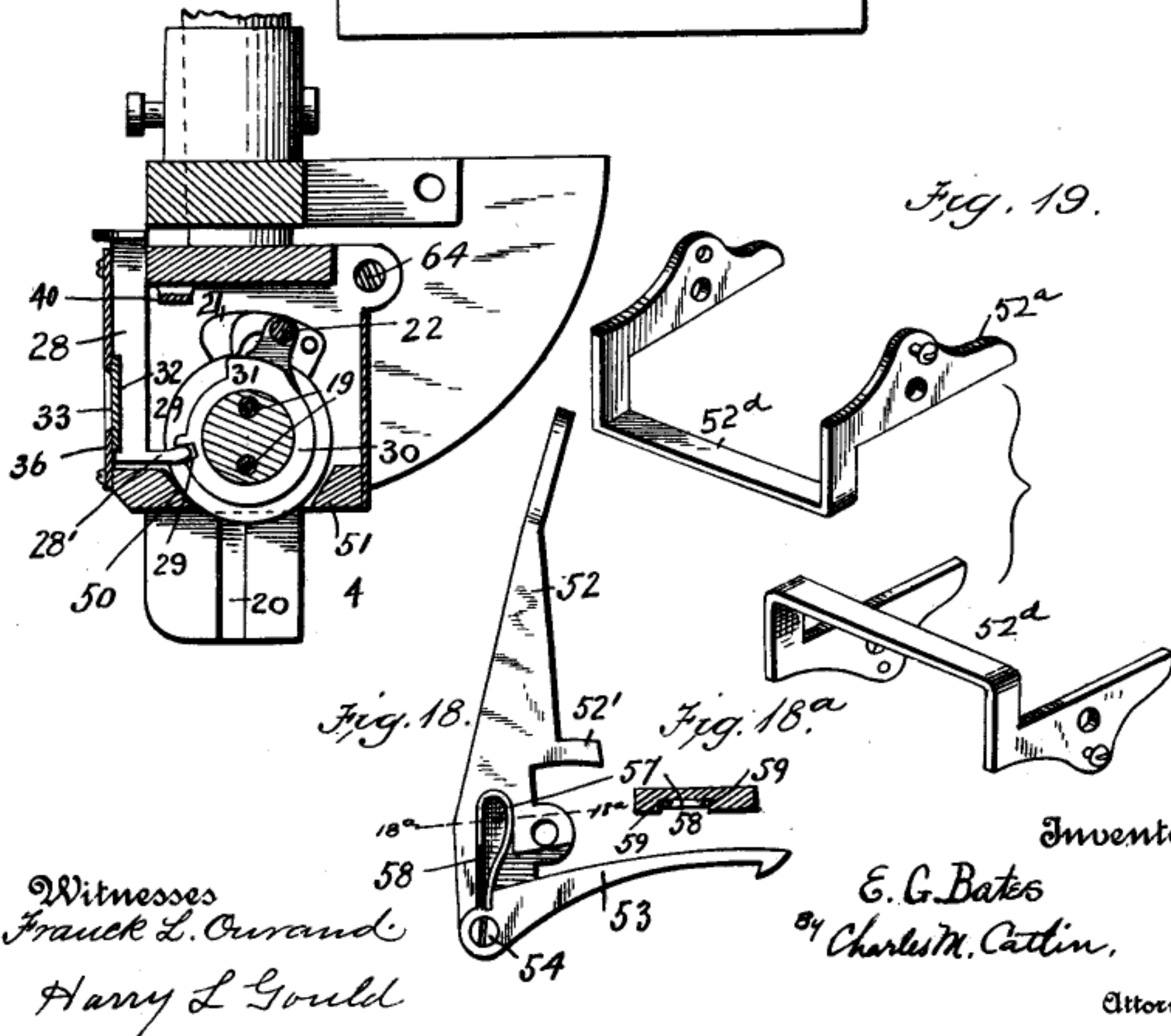
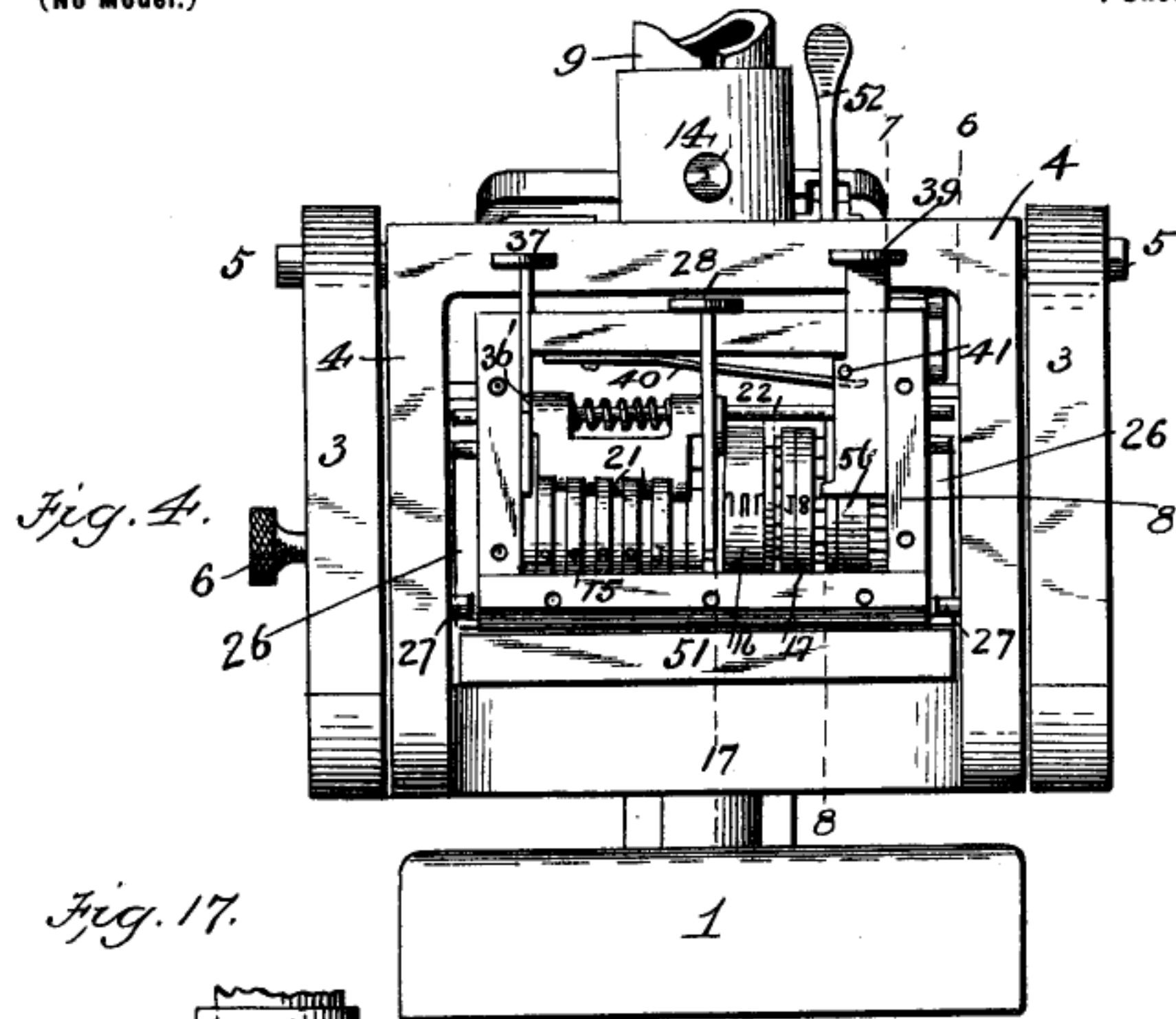
Attorney.

E. G. BATES.
NUMBERING AND DATING MACHINE.

(Application filed Aug. 18, 1898.)

(No Model.)

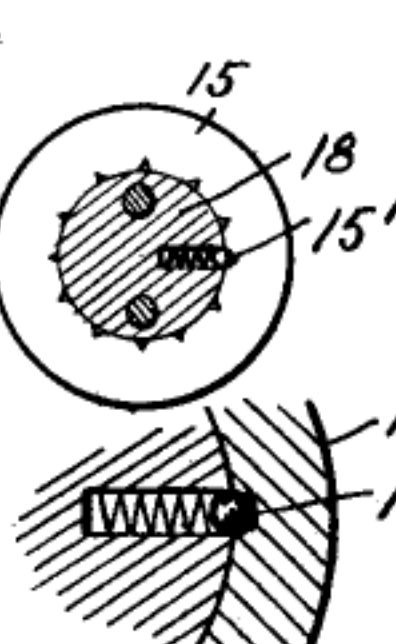
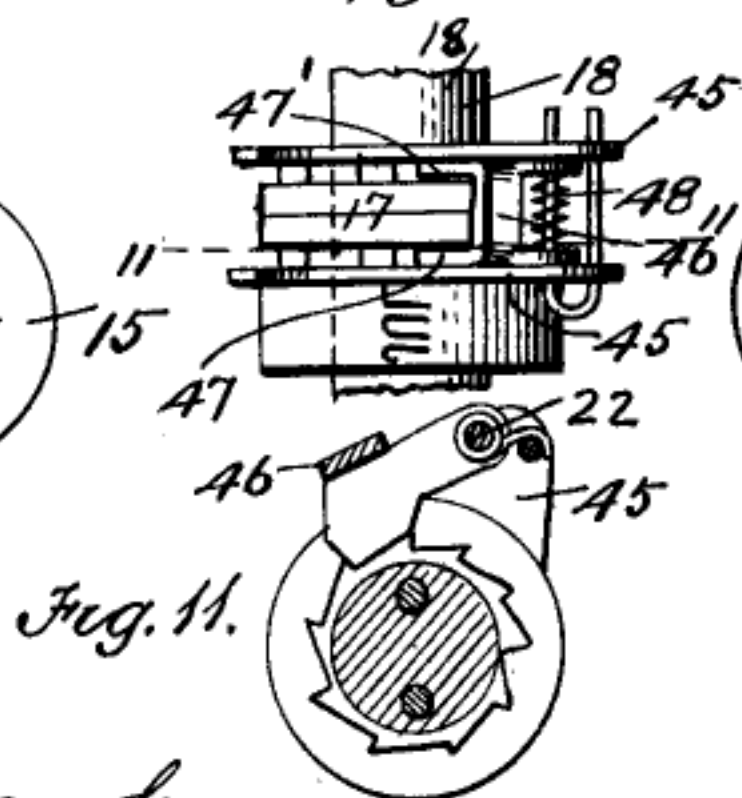
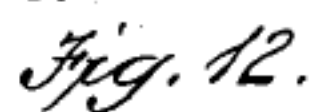
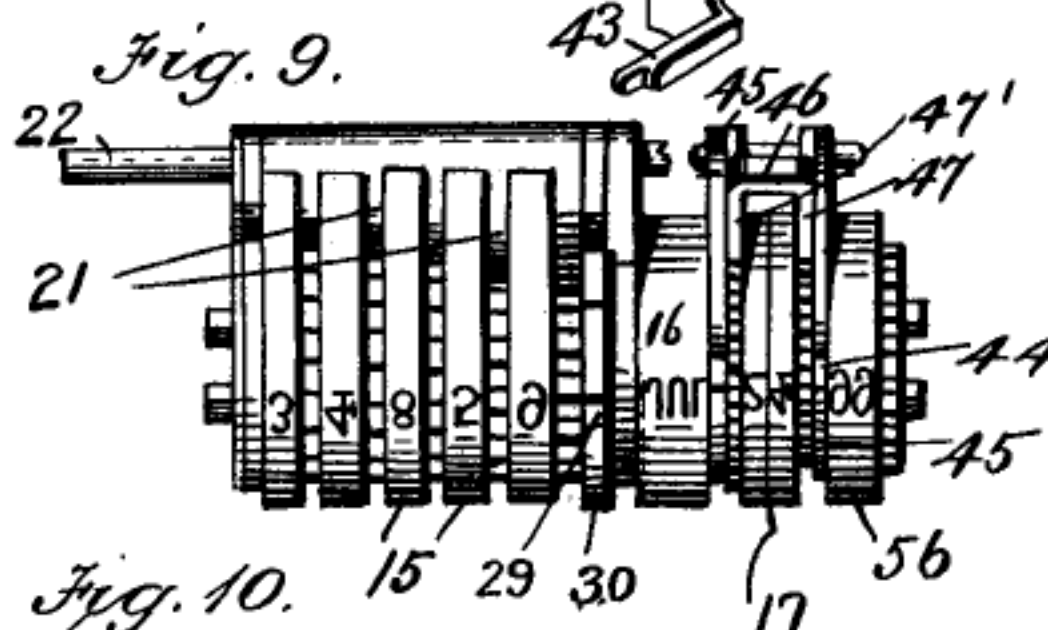
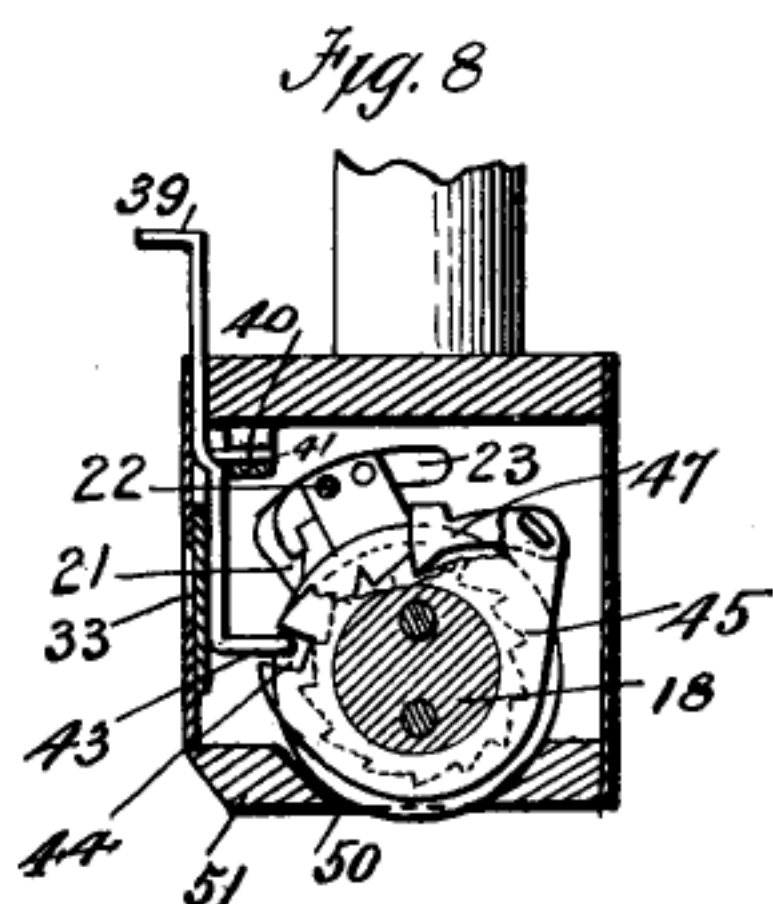
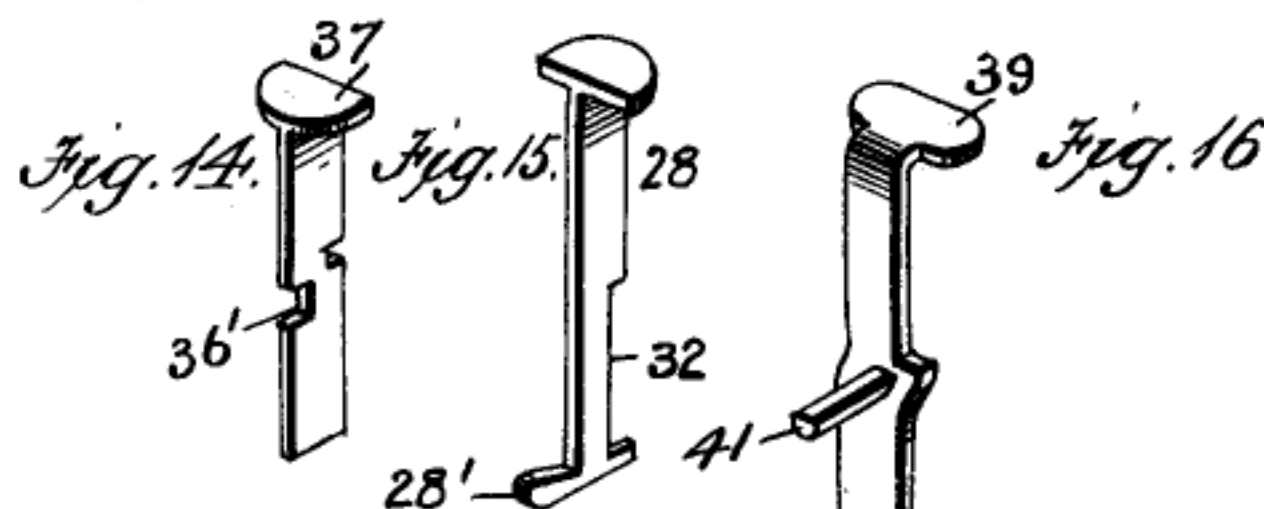
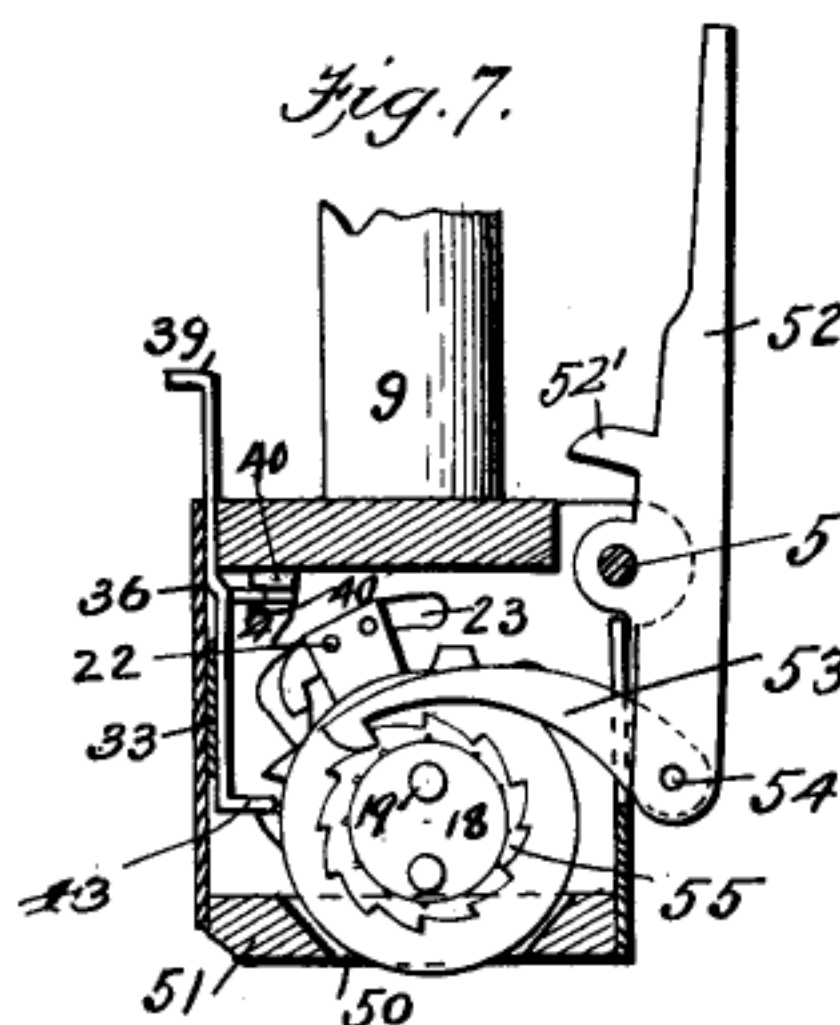
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(Application filed Aug. 18, 1898.)

4 Sheets—Sheet 4.

(No Model.)



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UNITED STATES PATENT OFFICE.

EDWIN G. BATES, OF NEW YORK, N. Y., ASSIGNOR TO THE BATES MACHINE COMPANY, OF SAME PLACE.

NUMBERING AND DATING MACHINE.

SPECIFICATION forming part of Letters Patent No. 676,083, dated June 11, 1901.

Application filed August 18, 1898. Serial No. 688,904. (No model.)

To all whom it may concern:

Be it known that I, EDWIN G. BATES, a citizen of the United States, and a resident of New York, in the State of New York, have
5 invented certain new and useful Improvements in Numbering and Dating Machines, of which the following is a specification.

This invention relates to numbering and dating machines, preferably also having a die
10 for printing additional matter.

In the drawings, Figure 1 is a perspective view of the machine in its normal condition. Fig. 1^a is a rear view of the face-plate and its shutter. Fig. 2 is a perspective view of the
15 machine, the head being turned back to extend the ink-pad for reinking. Fig. 3 is an end view looking from the left of Fig. 1. Fig. 4 is an end view, enlarged, looking from the right of Fig. 1. Fig. 5 is a side view with
20 parts broken away. Fig. 6 is a sectional view on line 6 of Fig. 4. Fig. 7 is a similar view on line 7. Fig. 8 is a sectional view of the head on line 8 of Fig. 4. Fig. 9 is a front view of the printing-wheels removed from the
25 machine. Fig. 10 is a side view of the date-wheels and pawl device for advancing them. Fig. 11 is a section on line 11 11 on Fig. 10. Fig. 12 is an end view of the printing-wheel axis with wheels thereon, a part being broken
30 away to show an old means for holding the wheels in position. Fig. 13 is a like view of an improved form of holding device. Figs. 14, 15, and 16 are perspective views of three push-buttons. Fig. 17 is a sectional view on
35 line 17 of Fig. 4. Fig. 18 is a side view of a pawl and lever. Fig. 19 shows perspectives of an ink-pad-lifting device in two positions. Fig. 20 is a perspective view showing a modified lever connected to the head. Fig. 21 is
40 a partial perspective of the step-pawl for the day-of-the-month-printing wheels. Fig. 22 shows side views of both sides of one of said wheels. Fig. 23 shows a side view of the other of said wheels on the ratchet side. Fig. 24
45 is a side view of the same on the opposite side, and Fig. 25 is a plan view of the date-number wheels developed to show the arrangement of figures on their peripheries.

This machine is designed especially to aid
50 in systematizing the auditing of "C. O. D." and charge or other accounts, printing any

wording required by means of an engraved die-plate, in conjunction with the number and date of the transaction; but the utility of the machine is not limited to the uses named. 55

1 is a base having an arm 2 with standards 3, supporting the frame or body 4, with sides and top but open at the bottom, pivoted at 5 to the standards.

6 is a pin which normally engages hole 7 in 60 a rearwardly-extending wing of the frame and holds said frame in the position shown in Fig. 1—that is, in the position which it must occupy when the machine is used.

8 is the printing-head, carried by frame 4 65 and having a tubular handle 9 with a slot 10 enlarged at 11, the handle being adapted to be reciprocated in the sleeve 12 of frame 4, being normally raised by spring 13.

14 is a pin having a part of small diameter, 70 which passes through slot 10, and a part which can only enter the slot at enlargement 11. The lower end of spring 13 rests on the pin.

The head 8 comprises a suitable frame in which are a set of automatic numbering- 75 wheels 15, a month-printing wheel 16, and day-of-the-month-printing wheels 17, which form a second set of number-wheels, and year-wheels 56, all mounted on a non-rotary axis 18, from the ends of which project pins 80 19, adapted to hold the axis from rotation and to travel up and down in grooves 20 of frame 4 when the head is moved in the act of printing. Heretofore I have held the printing-wheels in any position to which they were 85 set on the axis by pointed pins in holes in the axis and pressed out by springs to engage notches in the wheels 15, as shown in Fig. 12; but I find that round balls 15', of steel or other suitable material, as shown in Fig. 13, are 90 preferable to the pins. Said number-wheels 15 are advanced in a usual manner by the stepped pawls 21, pivoted on rod 22, the ends of which project through curved slots 23 in the ends of the frame of the head. Each pro- 95 jecting end of pin 22 is engaged by a notch 24 in a plate 25, pivoted on the upper pin 19 between the head and frame 4 and having prongs 26, spreading toward the front of the machine. Between the prongs on the inside 100 of frame 4 are pins or projections 27, which as the head moves up and down turn plates

25, advancing and returning the stepped pawls, and in one condition of button 28 advancing one or more of the number-wheels, so as to print numbers consecutively. If it
 5 be desired to print the same number repeatedly instead of numbers consecutively, the button 28 is depressed to the position shown in Figs. 1, 4, and 17. The button has a projection 28', which engages a notch 29 in a ring
 10 30, movable on the axis 18 and having a cam projection 31, which as the ring is turned moves under the stepped pawl-plate, as shown in Fig. 17, and holds the pawls away from their ratchet-wheels, thus preventing the
 15 turning of the number-wheels by the act of printing. The push button or bar 28 has a notch 32 in its front edge which engages the indicating-plate 33 on the side of pivot 34 away from point 35. In Fig. 1^a the positions
 20 of buttons 28 37 relative to the plate are indicated in dotted lines.

The front of the head is provided with a removable face-plate 36, having a single central opening, behind which is the indicating
 25 plate or shutter 33, having on its front side the words "Consecutive" and "Repeat" (see Fig. 1) so located that when one is visible the other is hid by the face-plate. End 35 of plate 33 is engaged by notch 36' of push-
 30 button 37, Fig. 14. When button 37 is up, the word "Repeat" is visible, as in Fig. 1. When said button is down, the plate is shifted so that the word "Consecutive" is visible and "Repeat" is hidden to indicate the char-
 35 acter of numbering the machine is set to print, and by the shifting of said plate button 28 is raised, turning ring 30 and carrying cam 31 from under the stepped pawl-plate, so that the machine will print num-
 40 bers consecutively.

The wheels 17 for printing the days of the month, which form a second set of number-wheels on the axis 18, are advanced daily by manually depressing the date-button 39, which
 45 is normally held up by spring 40 pressing on pin 41. The button 39 has a projection 43, which engages a notch 44, Fig. 8, in one of the rings 45, adapted to turn on axis 18. Said rings carry a pawl-plate 46 with pawls
 50 47 47' for advancing the date number-wheels 17. 48 is a spring pressing the pawls toward the ratchet-wheels. Pawl 47' is slightly shorter than pawl 47 and does not operate its ratchet except when pawl 47 drops into a deep
 55 notch in its ratchet, or when the last plain tooth 38^c of one of the groups of teeth, which tooth in each group is a little higher than the first three teeth of the group, but not quite
 60 as high as teeth 38', is in position to be engaged by said pawl, or finally when either of the long gooseneck-shaped teeth 38' is in position such that the notch on its outer end will be engaged by said shorter pawl 47'.
 65 When a month has less than thirty-one days and the last day is printed, button 39 is depressed one or more times to bring the wheels

in position to print "1" for the beginning of a new month. The units date-wheel has a plain ratchet, which, however, has a single deep notch, (see Figs. 11 and 23,) and the
 70 numbers on the peripheries run from "0" to "9." The other date-wheel has a ratchet with two groups of ratchet-teeth of ordinary form and two elongated teeth 38' at diametrical points, and the numbers on the periph-
 75 ery are in two groups, each group reading "1" "2" "3" "3," with a space between groups. (See Fig. 25.) The spaces between groups may be blank, as at 38^a, Fig. 22, or may have a dash-printing device, as at 38^b.
 80 If numeral "1" of the units-wheel and one of the spaces between the groups of figures on the tens-wheel be in printing position, at each depression of the printing-head the long pawl
 85 47 will move the ratchet of the units-wheel and said units-wheel one space, the tens-wheel remaining stationary until "9" has been printed. At the next movement the long
 90 pawl 47 falls into the deep notch of its wheel, allowing the shorter pawl to engage the tens-wheel ratchet, so that both wheels are advanced together in the usual manner, and so on until "30" has been printed. Up to this
 95 point the short pawl 47' has operated on the first three plain teeth of one of the groups on the tens-wheel ratchet. The last—that is, the fourth—plain tooth of each group being
 100 higher than the first three teeth of the group, at the next operation pawl 47' engages the tooth, notwithstanding the fact that the longer pawl 47 does not fall into a deep notch,
 105 the result being that the next operation advances both wheels and sets up "31" in the printing-line. At the next operation the short pawl catches in the ratchet-tooth on the outer
 110 end of the next and longer tooth 38', the end of this tooth being at such height that when engaged by the shorter pawl it holds the longer pawl 47 from its ratchet. The next
 115 movement, therefore, advances the tens-wheel, the units-wheel remaining stationary, thus leaving the "1" of the units-wheel only in printing position. At the next movement the shorter pawl does not engage a ratchet-
 120 tooth, but moves into the space under the long tooth 38^c without advancing its wheel, and so on at each operation until the long pawl again reaches the deep notch of its ratchet. This lowers pawl 47', so that it will
 125 advance its wheel, (using the first plain tooth of the group,) and so on, as above described.

Lever 52 has a projection 52', which engages a lever 52'', pivoted at 52^b to the head. When lever 52 is moved to advance the year-wheel, projection 52' strikes a pin 52^a, pro-
 125 jecting horizontally from lever 52'', turning the lever on its pivot 52^b, causing the end 52^c to move against the top of body 4, thus moving the numbering-head downward, which
 130 movement through links 62 63, to be described, carries the ink-pad away from the wheels before the wheel advanced by lever 52

and pawl 53 begins to move. Evidently the utility of lever 52" is not limited to a machine having but one lever 52.

54 is the pivot of pawls 53 and is moved forward by the bent and approximately U-shaped spring 57, which is firmly and easily secured in place by being pressed into a depression 68, having undercut or grooved edges 59, Fig. 18.

10 Instead of lever 52", pivoted to one side of the head, I may use the device shown in Fig. 19, the sides of which are to be pivoted to opposite sides of the head, and the cross-bar 52^d serves the same purpose as pin 52^a. This form of lever is preferred when several handles 52 are employed.

60 is a holder for the ink-pad (or preferably for several pads) 61. The holder is supported and operated by links 62 63, the former being pivoted to the head at 64 and the latter pivoted on the fixed pin 5 in standards 3. The lower ends of the links are pivoted to the pad-holder, respectively, at 65 and 66. The two links or arms 63 are connected at 25 the top. By depressing the head in the act of printing the link 62 throws the pad back out of the way of the printing-surface. Link 63 has an extension 63', which strikes against the head or against projecting pins 63" on the 30 head, thereby forming means for preventing the ink-pad holder swinging too far front under the head.

67 is a spring which normally throws the pad-holder under the head.

35 68 is a spring pressing inward on the lower end of arm 69, pivoted on pin 5.

Arm 69 serves to lock the ink-pad against the bottom of the head when the latter is in an upright position. (See Figs. 3 and 5.) 40 When the head is being thrown back to the position of Fig. 2, pin 69', projecting from said arm, will strike one of the standards 3, stopping the swinging movement of arm 69, but allowing the holder to move from under the 45 said arm, after which the head and holder can move into the relative positions shown in Fig. 2.

On the lower end of arm 69 is a small pin or projection 69", which when said arm is in 50 locking position, Fig. 5, engages a shallow depression in the top of an arm of the ink-pad holder for the purpose of preventing arm 69 being accidentally swung outward; but this pin being short and the depression shallow 55 the pin will be crowded out of the depression when arm 69 is arrested, as above described.

To ink the pad, press down the handle and press pin 14 into enlargement 11 of slot 10, Fig. 1. Then throw the handle backward, as 60 in Fig. 2, and press pin 6 into hole 6' in body 4. This exposes the pad in horizontal position for inking, as shown in Fig. 2.

I may divide the pad-holder by partitions 70 and place pads 61 in the subdivisions for 65 different-colored inks—*e. g.*, red under the number-wheels and blue under the date-wheels.

Having described my invention, I claim—

1. The combination with a frame having standards, 3, a body pivotally supported on 70 said standards having top and sides but open at the bottom, a printing-head supported by said pivotally-supported body and having a handle passing through the top of the body, a spring normally holding the head and han- 75 dle up, means normally holding said pivoted body from turning on its pivot but adapted to release the body when desired, an ink-pad, and means operated by turning said body on its pivot for exposing the pad in approxi- 80 mately horizontal position for inking.

2. The combination with a frame having standards, 3, a body pivotally supported on said standards having top and sides but open 85 at the bottom, a printing-head supported in said body having a handle passing through the top of the body, a spring normally holding the head and handle up, said handle having a slot with enlargement near its center, a movable pin supported by said body and hav- 90 ing a part adapted to enter said slot at the enlargement only, a pin in one of the standards normally engaging a hole in said body to hold the body and the printing-head in up- 95 right position.

3. The combination of a base having stand- ards, a body 4 pivoted between the standards, said body having two holes 6', 7 at equal dis- 100 tances from the pivot, a locking-pin in one of the standards to enter one of the holes when said body is in an upright position and to enter the other hole when the body is turned to a horizontal position, a printing-head carried by said body 4, means for holding the head 105 partially depressed, an ink-pad holder and pad, and means operated by depressing the head and turning it to horizontal position for moving the ink-pad from under the head into position to be inked.

4. The combination of a base having stand- 110 ards, a body 4 pivoted between the standards, said body having two holes 6', 7 at equal distances from the pivot, a locking-pin in one of the standards to enter one of the holes when said body is in an upright position and to enter 115 the other hole when the body is turned to a horizontal position, a printing-head carried by said body 4, means for holding the head partially depressed, an ink-pad holder and pad, links 62 pivoted to the pad-holder and 120 to the printing-head, links 63 pivoted to the pad-holder and to a fixed pivot for moving the ink-pad into position to be inked.

5. The combination with a numbering-head, normally in vertical position, the ink-pad 125 holder, supporting and operating links for the pad-holder, a spring normally throwing the pad-holder forward under the head, a locking-arm, a spring normally holding said arm so as to engage and lock the pad-holder, and 130 means operated by turning the head to horizontal position for disengaging the locking-arm.

6. The combination with the numbering-

head, normally in vertical position, standards 3, body 4, pivot 5 therefor, the ink-pad holder, supporting and operating links for the pad-holder, a spring normally throwing the pad-holder forward under the head, a locking-arm, a spring normally holding said arm so as to engage and lock the pad-holder, a pin 69' projecting from said arm in position to strike standard 3 and withdraw said arm from engagement with the pad-holder when the head is moved to horizontal position.

7. The combination of standards, body 4 pivoted thereto, a printing-head adapted to reciprocate in said body, an ink-pad holder, links 62, 63 and spring 67 for moving the holder, and means to limit the forward movement of the holder under the head.

8. The combination of standards, a body 4, pivoted therein, and a printing-head having number-wheels, a non-rotary axis therefor, pins projecting from the ends of the axis, there being grooves in body 4 in which said pins move, and means for advancing the number-wheels.

9. The combination of standards, a body 4 pivoted therein, and a printing-head having number-wheels, a non-rotary axis therefor, pins projecting from the ends of the axis, there being grooves in body 4 in which said pins move, plate 25 having separated horns 26, a projection 27 of said body 4 between said horns for turning the plate when the head is reciprocated, the printing-head having stepped pawls for advancing the number-wheels, and plate 25 connected to the stepped pawls so as to move them when the head is reciprocated.

10. The combination with the number-wheels, stepped pawls, non-rotary axis, and pins 19 projecting from the end of the axis, and a body with grooves in which said pins slide, of plate 25 pivoted on one of said pins, and connected to the stepped pawls so as to move them.

11. The combination in a numbering-machine, of number-printing wheels, means for advancing the wheels for consecutive printing, means to change the printing from consecutive to another order, a face-plate having a sight-opening, an indicator-plate pivoted at the rear of the face-plate and having a plurality of words thereon indicating the character of numbering the machine is set to print, one of which words is visible at the sight-opening in one position of the pivoted plate, and the other of which is visible in another position of said plate, and push-buttons on opposite sides of the pivot of said pivoted plate each engaging said pivoted plate for moving it on its pivot from one of its positions to the other.

12. The combination with the body 8, of a numbering-machine, number-printing wheels and means for controlling them, of a face-plate, having a sight-opening, an indicating-plate pivoted to the face-plate and covering the opening, push-buttons engaging the piv-

oted plate on opposite sides of its pivot, said push-buttons being in grooves in the body 8 and being held therein by the face-plate.

13. The combination with the body 8, of a numbering-machine, number-printing wheels and means for controlling them, of a face-plate, having a sight-opening, an indicating-plate pivoted to the face-plate and covering the opening, push-buttons having notches engaging the pivoted plate on opposite sides of its pivot, said push-buttons being in grooves in the body 8 and being held therein by the face-plate.

14. The combination of body 8, number-printing wheels therein, a stepped pawl-plate for advancing them, means operated in the act of printing for moving said pawl-plate, a cam which in one of its positions prevents the pawls operating, and in another position allows the pawls to operate, and two push-buttons, one being connected to the cam to move it in one direction, and the other connected to move it in the opposite direction.

15. The combination of body 8, number-printing wheels therein, an axis on which the wheels are movable, a stepped pawl-plate for advancing them, means operated in the act of printing for moving said pawl-plate, a cam-movable on said axis and which in one of its positions prevents the pawls operating, and in another position allows the pawls to operate, and two push-buttons, one being connected to the cam to move it in one direction, and the other connected to move it in the opposite direction.

16. The combination of body 8, a face-plate having a sight-opening, an indicator-plate movable over said opening, number-printing wheels therein, a stepped pawl-plate for advancing them, means operated in the act of printing for moving said pawl-plate, a cam which in one of its positions prevents the pawls operating, and in another position allows the pawls to operate, and two push-buttons one being connected to the cam to move it in one direction, and the other connected to move it in the opposite direction, the indicator-plate being also moved by said two push-buttons.

17. The combination with the body 8, number-printing wheels, stepped pawls therefor and means for moving them in the act of printing, of a separate set of number-wheels on the same axis, stepped pawls for the separate set of number-wheels, a face-plate having an opening therein, a pivoted indicating-plate, push-buttons operating on said indicating-plate on opposite sides of its pivot, said push-buttons also operating a device to change the order of printing the numbers.

18. The combination of lever 52 having a depression 58 with grooved edges 59, of a bent spring held therein, and a pawl pivoted to the lever and pressed by said spring.

19. The combination with the numbering-head, a pawl-operating lever pivoted to the head and having a projection, as 52', a lever

pivoted to the head having a part adapted when moved to depress the head, and having a part in the path of projection 52' so as to be moved thereby, an ink-pad holder, and means operated by downward movement of the head for moving the ink-pad holder.

20. In a numbering-machine the combination of a printing-wheel, a lever 52 and device moved thereby to advance said wheel, said lever having a projection, a lever pivoted to the head and moved by said projection said movement depressing the head, and an ink-pad moved from the printing-wheel before the latter begins to turn.

21. The combination of a units number-wheel having figures on its periphery from "0" to "9," a ratchet for said wheel, a tens-wheel having numbers in two groups both running "1, 2, 3, 3" with spaces between groups, a ratchet for the tens-wheel, stepped pawls the longer of which engages the ratchet of the units-wheel, a ratchet for the tens-wheel having regular teeth to advance said wheels as many times as there are figures in one of said groups by the shorter pawl, and said ratchet for the tens-wheel having two opposite elon-

gated teeth in position to be engaged by said shorter pawl after the last figure of a group has been used, said elongated teeth being of such length as to hold the longer pawl from its ratchet, whereby the units-wheel will be left in position to print "1," and the tens-wheel will present a space to the paper being printed.

22. The combination of a units number-wheel with figures on its periphery from "0" to "9," a tens-wheel having figures in groups running "1, 2, 3, 3" with spaces between groups, and means for advancing said wheels to print from "1" to "31" and then repeat, as set forth.

23. A figure-wheel having figures on its periphery in a plurality of groups each beginning at "1" and running consecutively to the highest number in the group, the last figure of each group being in duplicate, as set forth.

Signed this 22d day of July, 1898.

EDWIN G. BATES.

Witnesses:

CARRIE E. HUESTIS,
H. D. RANDALL.

NEXT ITEM

No. 676,084.

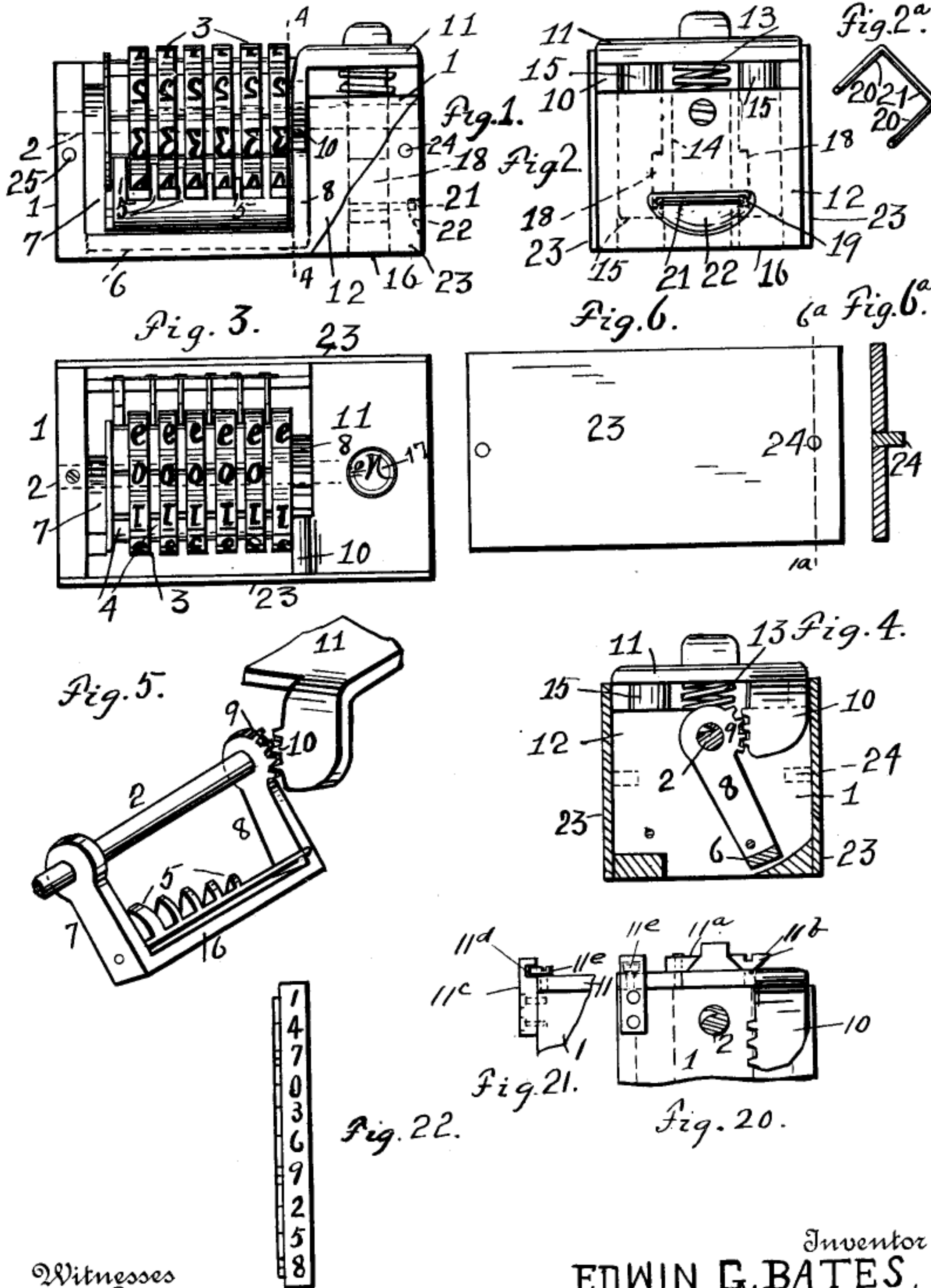
Patented June 11, 1901.

E. G. BATES.
AUTOMATIC NUMBERING MACHINE.

(Application filed Aug. 4, 1900.)

(No Model.)

3 Sheets—Sheet 1.



Witnesses
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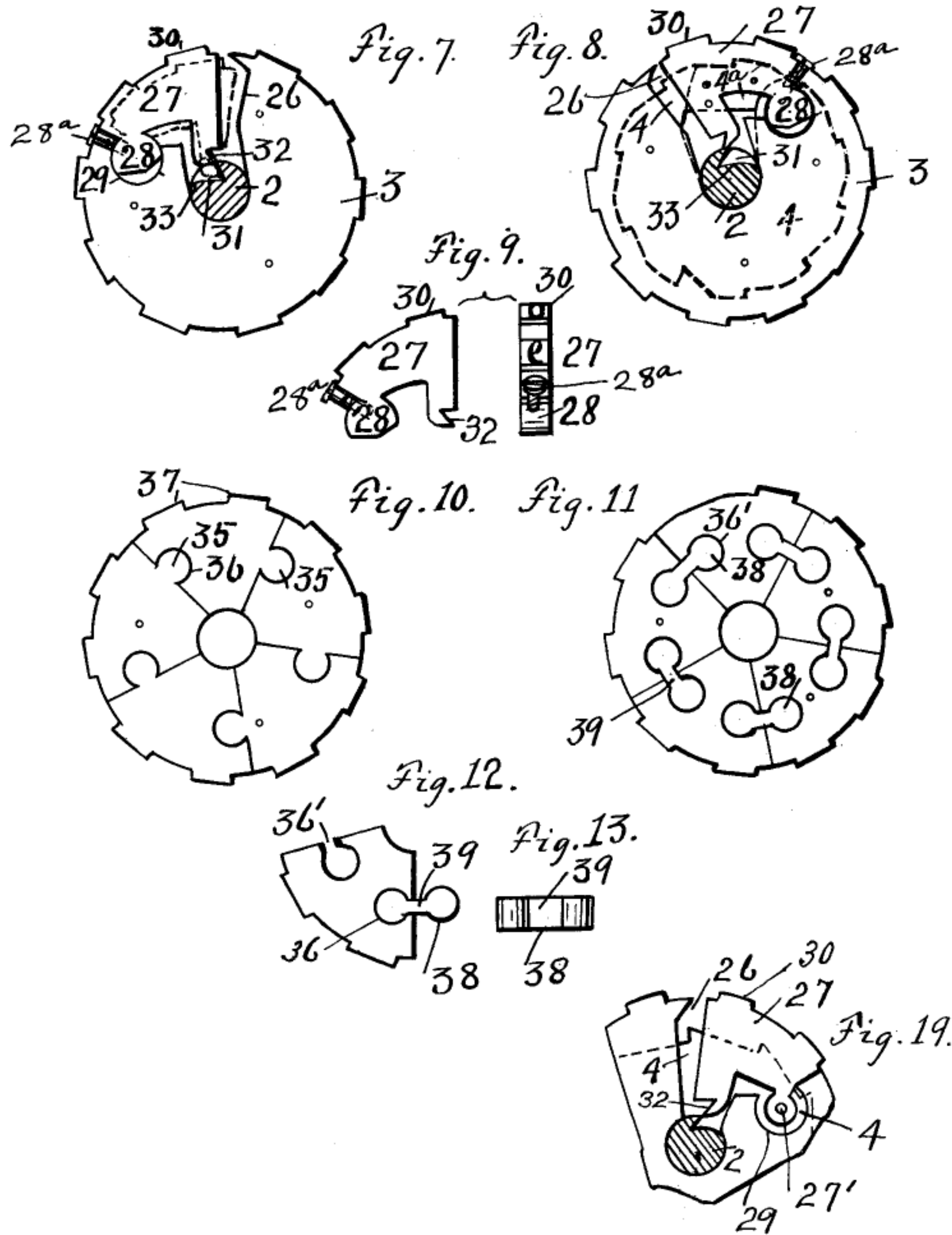
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(No Model.)

3 Sheets—Sheet 2.



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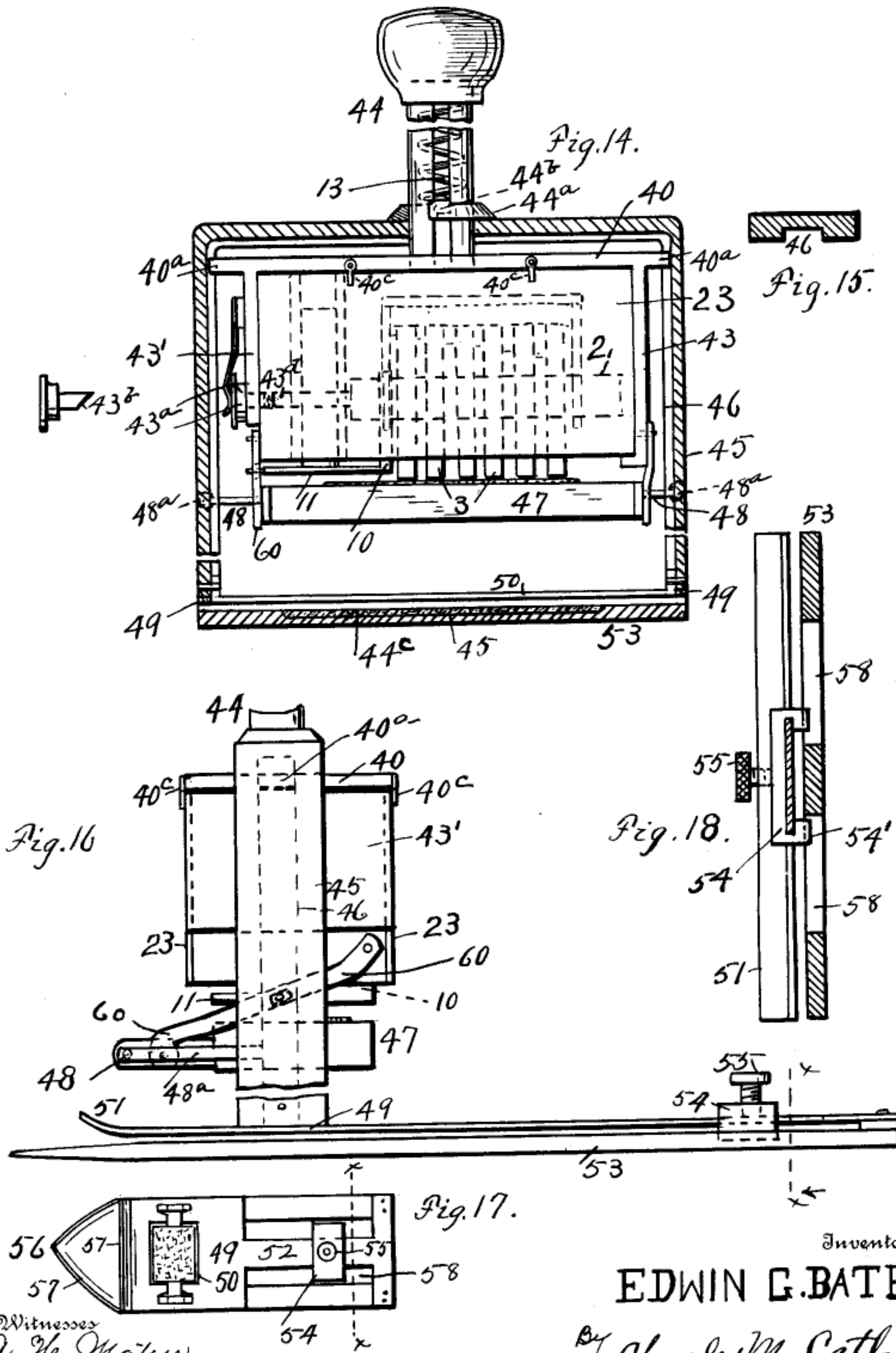
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AUTOMATIC NUMBERING MACHINE.

(Application filed Aug. 4, 1900.)

(No Model.)

3 Sheets—Sheet 3.



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UNITED STATES PATENT OFFICE.

EDWIN G. BATES, OF NEW YORK, N. Y., ASSIGNOR TO THE BATES MACHINE COMPANY, OF SAME PLACE.

AUTOMATIC NUMBERING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 676,084, dated June 11, 1901.

Application filed August 4, 1900. Serial No. 25,906. (No model.)


To all whom it may concern:

Be it known that I, EDWIN G. BATES, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Automatic Numbering-Machines, of which the following is a specification.

This invention relates mainly to type-high automatic numbering-machines, designed to be locked in a chase with the form, surrounded with type matter, or used separately when numbers only are to be printed, and to such machines combined for use with the frame of an automatic hand numbering-machine, to an improved gage, and other features hereinafter set forth.

In the drawings, Figure 1 is a side view of a typographic numbering-machine, the front side of the casing being broken away. Fig. 2 is an end view of the same. Fig. 2^a is a perspective view of two connected pins. Fig. 3 is a plan. Fig. 4 is a section on line 4 4 of Fig. 1. Fig. 5 is a perspective of the stepped pawls and plate or frame carrying said pawls. Fig. 6 is a rear side view of a side of the casing. Fig. 6^a is a sectional view on line 6^a 6^a of Fig. 6. Fig. 7 is a side view of a wheel with a drop-cipher, showing also a section of the axis. Fig. 8 is a similar view showing the opposite side of such wheel, its ratchet-wheel being shown in dotted lines. Fig. 9 is a side and an edge view of the drop-cipher section detached. Figs. 10 and 11 are side views of two slightly-different constructions of number-wheels. Fig. 12 is a side view of a segment of the wheel of Fig. 11 detached. Fig. 13 is a side view of a securing device. Fig. 14 is a vertical section of a hand numbering-machine frame with a gage and the typographic machine supported in the frame. Fig. 15 is a transverse cross-section of the frame. Fig. 16 is a side view of the machine. Fig. 17 is a plan view of the gage detached and on a smaller scale. Fig. 18 is a section on lines *xx* of Figs. 16 and 17. Fig. 19 shows a modification of the drop-cipher connection. Figs. 20 and 21 are views at right angles to each other of a modified plunger-plate and locking device therefor, and Fig. 22 shows

the periphery of a modified number-wheel developed.

1 is a metal frame of  shape, with the usual printing-opening in its bottom, which frame carries a non-rotary axis 2, on which are several number-wheels 3, each of which has secured to one of its sides a ratchet-wheel 4, with which the stepped pawls 5 engage in the usual way. Said pawls are carried on a plate 6, pivoted by arms 7 8 on the axis 2. Arm 8 has a segment of gear 9 engaged by a rack 10, projecting down from plate 11, which is transverse to the axis and is normally held above the end 12 of the frame and out of the printing-plane by a strong spring 13, held in a hole or socket 14 in said frame, the spring pressing against the plate between the pins at their upper or outer ends. Plate 11 is guided in its reciprocating movements by pins 15 in holes or sockets 16 in end 12 on opposite sides of the spring. Plate 11 is normally out of the printing-plane and is so mounted and guided that it moves straight up and down bodily as distinguished from swinging on a pivot, as does plate or lever J, for example, in my Patent No. 484,390, and the projecting arm is rigid with plate 11, being preferably integral therewith, and the teeth thereon forming a straight rack. Pins 15 have on their facing sides elongated notches 18, which come within holes 16, and the end 12 has holes 19 at right angles to said notches in lines intersecting the notches, as shown in Fig. 2. In said holes pins 20 are inserted to form limiting devices for pins 15 and plate 11 against the normal tension of spring 13. It is preferred to connect these pins by an integral cross-piece 21, Figs. 2 and 2^a, so that they may both be inserted or removed by a single operation and the number of separate pieces be reduced. End 12 of the frame has a notch or depression 22, just deep enough to admit part 21, so that it shall not project beyond the face of end 12. The notch at one side of part 21 is inclined, Figs. 1 and 2, so that a suitable tool can be inserted under part 21 to withdraw pins 20 when necessary to remove pins 15 and plate 11. This device locks or unlocks both pins 15 simultaneously and is a very cheap and efficient device. Plate 11 also has a pro-

jection 17, which extends above the top of the number-wheels and which is provided with the printing character or device "No." or other desired character and is so located as to print in the same line as the number-wheels, which at the printing-line are type-high. The part 11 is adapted to receive the impact of a printing-platen in the act of printing when the numbering-machine is fixed in the form and to be moved down to the level of the type-wheels, which movement operates the rack 10 and swings the plate 6 and stepped pawls carried thereby. When the platen ceases to press on the machine, spring 13 raises plate 11 and swings the pawl-carrying plate and stepped pawls back to the position in Fig. 4, which return movement advances one or more of the number-wheels. It is not broadly new to provide period-plates, "No." plates, and the like, which are depressed by the platen and have means for operating the pawl-plate. The present invention, however, comprises improved constructions, as shown and described.

The frame 1 is provided with side plates 23, each of which has two or any suitable number of pins 24, rigidly fixed to the plate, which fit removably into smooth holes 25 in frame 1 and form the only securing devices for the sides, the latter being therefore readily put in place and removable without the necessity of operating-screws, as is usually the case. When the machine is in a form, these plates are firmly clamped in place by the surrounding matter. In Fig. 1 the front plate 23 is partly broken away to show parts behind it.

Preferably the number-wheels 3, following the units-wheel, have drop-ciphers of improved construction and for the usual purpose of such devices. Referring to Figs. 7, 8, and 9, each of said wheels 3 has a segment removed at 26 and a section 27 pivoted in space 26 by an extension 28, hereinafter more fully described, which fits so as to turn in socket 29 in the body of wheel 3. While the socket moves with the wheel, it is fixed in relation to the removed segment. The drop-cipher section 27 is enough smaller than space 26 to allow the required movement. Preferably the section constitutes a fifth of the wheel, and has two printing characters, one of which, 30, is the zero. Axis 2 has an undercut longitudinal groove 31, into which the hooked ends 32 are engaged to normally hold the part 27 depressed. Fig. 7 shows the section 27 just about to drop as end 32 is carried over the edge of the groove by rotation of the wheel. The part 32 will then be caused to engage the undercut by a slight backward movement of the wheel, which may be effected by the hand, this position being shown in dotted lines, Fig. 7. When the wheel is turned, end 32 passes out of the undercut groove, is raised by contact of the lower side 33 of the groove, and is supported in printing position—that is, with its outer face in

the periphery of the wheel—by the periphery of shaft 2 for a full revolution of the wheel and not liable to get out of order.

In some machines or in some wheels of some machines I omit the drop-ciphers and use complete wheels, which may consist of segments fastened together to form such wheel. The last wheel in a machine is generally made without a drop-cipher, as shown in Fig. 3 the last wheel at the right. In Fig. 10 is shown a wheel designed for said last wheel or for such other location as requires no drop-cipher. Each segment is provided with a cylindrical extension 35 and similarly-shaped opening or socket 36. Each segment is preferably a fifth of the wheel and has two numerals 37 on it. The segments are forced together and form a permanent structure. By making the wheels of segments the numbers can be stamped thereon, while with wheels of a single piece the numbers must be engraved.

The wheel shown in Fig. 11 differs from that of Fig. 10 in that each segment has two openings or sockets 36' and the segments are secured together by fastening devices 38, the ends of which are driven into sockets 36' of adjoining segments. It is preferred to place the circular parts of the sockets back from the edge of the segment, with a narrow passage leading therefrom to the segment edge, as shown.

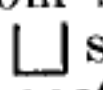
The cylindrical heads of the securing devices are connected by thin flat stems 39, which fit into said narrow passages. This makes a strong easily-assembled wheel. Evidently a drop-cipher such as shown in Figs. 7 and 9 could be substituted for the zero-segment in these wheels, Figs. 10 and 11, if desired. In making these wheels a device 38 may be inserted in one edge of each segment, (see Fig. 12,) the projecting end thereof then corresponding to projection 35 of Fig. 10 and the socket 36' at the opposite edge corresponding to socket 36.

Sometimes the user of numbering-machines, especially printers, desires a typographic machine and also desires an automatic hand numbering-machine. According to this invention it is possible to use the same printing-head in both situations.

In Fig. 14, 40 is a handle-plate adapted to be secured to the machine shown in Figs. 1, 2, &c. Fig. 14 shows plate 40 secured to said machine inverted and in a hand-machine frame. The handle 44 of a hand numbering-machine is suitably secured to plate 40, which is provided with lugs 40^a at the ends, adapted to travel in groove 46. The plate also has a vertical arm 43, with a ledge at its bottom to support one end of the typographic machine and an arm 43' at its opposite end, in which is an automatic spring-catch 43^a, the inner end 43^b of the catch being beveled on one side, so as to be retracted when the typographic machine is pushed in, but having its upper side straight, so as to form a support

for that end of the typographic machine when the catch snaps into a hole in the head. Preferably a hole 43^d in line with the axis 2, which is generally found in machines now in use, 5 for use in removing the axis is utilized also for the catch. The vertical arm 43, with its ledge, and the opposite arm 43' and spring-catch 43^a form means for connecting the typographic machine to plate 40.

10 43^c represents buttons pivoted to plate 40 and adapted to swing down, as shown, to prevent the side plates 23 becoming detached from the head when used in the hand-machine.

45 is the frame of a hand numbering-machine, this frame preferably being formed from a uniform strip of steel, with a groove 15 46 on one side for its entire length, a piece being cut from said strip of suitable length and bent to  shape. The strip is of uniform cross-section throughout its length. 20 This type of frame is not claimed herein.

47 is an ink-pad holder pivoted at 48 at one side of the frame.

49 is a thin printing-plate, of steel or other 25 suitable metal, secured to the ends of the frame and having a printing-opening 50. One end of plate 49 is bent up at 51 a short distance from the frame. At the other end plate 49 has an integral extension 52, narrower than plate 49, which serves as a yielding 30 or spring connection or support for a comparatively thick and heavy steel tongue 53, which in use is slipped under the card or sheet to be printed, providing the necessary 35 solidity of surface to insure clear impressions.

44^c is a felt or other yielding pad in a depression 45 in plate 53.

54 is a cross-bar adapted to slide on the extension 52 and preferably engaging the edges 40 thereof, as shown at 54'.

55 is a screw for securing bar 54 at any position to which it is adjusted.

The rear end 56 of plate 53 is tapering or rounded and also has a downward bevel 57, 45 which, together with the upturned edge of the printing-plate, makes it easy to insert the cards to be printed. The plate may be cut away at 58 to decrease weight and to make room for the ends of bar 54.

50 In use this machine is held in the right hand, (extension 52 and plate 53 forming a handle,) the ticket, for example, being grasped by the thumb and fingers of the left hand, and is passed between plates 49 53 until it is stopped 55 by the gage-block 54, thus bringing the palm of the left hand under plate 53, affording sufficient solidity beneath the card to insure a good impression when handle 44 is depressed by the right hand. The gage being properly 60 set, the cards will be printed exactly on the correct line. The same machine can be used for cards or tickets of different sizes by adjusting the gage.

The ink-pad-holder pivot, Fig. 16, must, as 65 usual, be supported at a distance to the rear of the frame 45; but owing to the form of the frame described there are no rearwardly-ex-

tending lugs to support the pivot, as in old machines having cast frames, nor, owing to the thinness and form of the printing-plate, is 70 it advisable to support standards therein. Moreover, the curved end of said plate is usually in such position as to interfere with thus supporting the standards. These objections are overcome in this improvement 75 by supporting such standards 48^a horizontally from edges of the vertical legs of frame 45 at the proper height for the pivot. Said standards are preferably supported by being forced into plain holes—i. e., holes not having screw- 80 threads—in the frame; but it is not essential that such plain or smooth holes be used. The ink-pad support is swung back by depressing the head in any well-known or suitable way, means therefor being indicated by arm 60, 85 between the pad-support and the head, and moved by movement of the latter, as common in numbering-machines. Lever or arm 60 is provided with an elongated slot 60^a, into which a pin 60^b, projecting from plunger- 90 plate 11, extends for moving the plate and the pawl-plate-moving rack 10 when the head is reciprocated.

With typographic numbering-machines it is sometimes desirable to change from con- 95 secutive numbering to printing numbers in progression with a difference or arithmetical ratio greater than one for special occasions, and it is desirable to be able to use a single machine in both cases by simply substitut- 100 ing one units-wheel for another, this being done without taking the machine apart. To make the units-wheel easily removable, I cut away the pivot 28 of the drop-cipher (on the lower side in Fig. 7) in such manner that 105 when the drop-cipher is in its raised—that is, printing—position part 28 still has bearings in the cylindrical opening 29 on opposite sides, so that the cipher-section will readily turn on its pivot when unsupported. The 110 opening in which the section 27 is mounted is made a little longer at the periphery of the wheel than the body of the segment. The extra length, however, is occupied by a suitable device, as a screw 28^a, set in the part 28, 115 and limits the normal outward movement of part 27. By removing this screw, part 27 can be turned up a little farther until the inner edge of part 28 passes out of opening 29, when section 27 can be lifted out. Then 120 the wheel can be turned and removed, the cut-away part of the wheel and of its ratchet being adapted to slip over axis 2. As shown in Fig. 8, a segment 4^a of ratchet-wheel 4 is separate from the rest of the ratchet-wheel, 125 but is riveted to segment 27, and is of such form as not to interfere with movement of part 27. The ends of segment 4^a are shown curved, the center being the center of pivot 28. When the units-wheel is removed, an- 130 other wheel is substituted by slipping it into place in manner the reverse of that above described. On the substitute wheel the ten printing numbers are arranged in order of

the units-columns of the progression—thus, for example, “1, 3, 5, 7, 9, 1, 3, 5, 7, 9,” or “1, 4, 7, 0, 3, 6, 9, 2, 5, 8.” It will be seen that the ratchet of this units-wheel must have a deep notch for each group of figures terminating at the last number of the progression below a number requiring a zero, (as “10,” “20,” &c.,) so that the following wheel or wheels will be suitably advanced with the units-wheel. In the first example above given the tens-wheel must be advanced twice for each revolution of the units-wheel and in the second example three times. The number of times which the tens-wheel is advanced is a fixed and definite number of times for each progression of numbers on the units-wheel, said number of times corresponding to the ratio of the progression. Evidently the drop-ciphers of the number-wheels following the units-wheel and said wheels themselves are not necessarily made removable, but may be.

When the typographic machine is to be used in a hand-machine frame, the strong spring is removed from its place behind the plate 11 and is utilized as the head-raising spring in the handle 44 of the hand-machine.

44^a is a ring from which finger 44^b extends into the handle and forms an abutment for the spring. A thinner plunger-plate 11 than the one removed is substituted, (Figs. 14 and 16,) so as to remain above the printing-plane when the head is depressed. The plunger is connected to the stepped-pawl-carrying plate, as described in connection with Figs. 4 and 5.

The plunger-plate in the typographic machine may have a removable “No.” or prefix printing block. The base of this block is outwardly beveled and is held between a fixed undercut block 11^a and a clamping-screw 11^b. 11^c is a block secured to frame 1 and having a notch 11^d.

11^e is a screw set on plate 11 and having an eccentric head which when properly turned (when the plunger-plate is depressed) engages the notch and locks the plunger down, so that the machine may print the same number indefinitely.

In Fig. 19 is shown a modification, the drop-cipher section being pivoted to the ratchet-wheel by pivot 27', which may or may not be within an opening 29. This may be used when the removable drop-cipher and wheel are not required.

I claim—

1. The combination in a numbering-machine of a frame, an axis, number-wheels with pivoted drop-cipher sections whose printing-faces are normally retracted out of the printing-plane but which reach said plane when the wheels are turned, ratchets for the number-wheels, stepped pawls, a pawl-carrying plate having arms with bearings on said axis, one of said arms having gear-teeth, a plate guided to move bodily straight up and down, means including a spring normally holding said plate out of the printing-plane, the spring being adapted to be compressed in the act of

printing, a projecting arm rigid with said plate and having a straight rack engaging said gear-teeth on the arm.

2. The combination, in a numbering-machine, of a frame, an axis, number-wheels, ratchets, a stepped pawl, a pawl-carrying plate having arms with bearings on said axis, one of the arms having gear-teeth, a plate, a spring normally holding the plate out of the printing-plane and adapted to be compressed by the act of printing, pins for guiding said plate, and a projecting arm on said plate with teeth engaging said gear-teeth, as set forth.

3. The combination, in a numbering-machine, of a frame, an axis, number-wheels, ratchets, a stepped pawl, a pawl-carrying plate having arms with bearings on said axis, one of the arms having gear-teeth, a plate, a spring normally holding the plate out of the printing-plane and adapted to be compressed by the act of printing, pins for guiding said plate, and a projecting arm with teeth engaging said gear-teeth, the pins having limiting-notches, and pins mounted in the frame and passing into said notches to serve as stops for the first-mentioned pins.

4. The combination with the axis, number-wheels, pawls, plates carrying the pawls and pivoted on said axis, of plate 11, pins 15 having notches 18, pins 20 engaging the notches to limit the movement, a spring normally holding said plate out of the printing-plane, and the rack-arm on said plate for swinging the pawl-plate.

5. A plate 11 having a printing projection, notched limiting guide-pins, and a rack parallel with said guide-pins, in combination with pins 20 passing through said notches and forming stops for the pins, number-wheels, and means for turning them operated by said rack.

6. The combination with plate 11, and a plurality of limiting and guide pins having notches, of a plurality of connected pins 20 engaging respectively the notches of the guide-pins, whereby the pins 20 can be simultaneously inserted or removed.

7. The combination of a frame, plate 11, pins 15 movable in holes in said frame and having notches, connected pins 20, said frame having holes for pins 20, and a depression in the outside of the frame adapted to receive the part connecting pins 20, one side of the notch being inclined as set forth.

8. A number-wheel having a segment removed therefrom, a section 27 having one or more numbers thereon, one being a cipher, section 27 having a pivot extension 28, and the body of the wheel having a fixed socket 29 in which the extension can turn to lower or to raise the cipher.

9. A number-wheel having a segment removed therefrom, a section 27 having one or more numbers thereon, one being a cipher, section 27 having a pivot extension 28, and the body of the wheel having a socket 29 in which the extension can turn to lower or to

raise the cipher, section 27 having a hooked end 32, in combination with an axis having an undercut longitudinal groove for controlling the drop-cipher.

5 10. A rigid permanent number-wheel having a plurality of parts, and a connection between them consisting of a projection from one part fitting a fixed socket in the adjoining part, said projection being sufficiently
10 large as to require great force to enter it in the socket, and the socket surrounding the larger part of the projection so as to maintain its hold thereon.

11. The combination with a typographic
15 numbering-machine adapted to be used in a form with type, of a hand-numbering-machine frame, means for detachably securing said typographic machine therein, and means for operating the same manually, whereby the
20 same head can be used either as a typographic machine or as a hand-machine.

12. In a number-wheel the combination of a wheel-body with a segment removed, a pivoted drop-cipher section having a plurality of
25 characters thereon, one of which is the cipher, the cipher-section being within the space left by said removed segment and having a pivot extension bearing in a fixed pivot-socket in the wheel-body.

13. The combination of a typographic numbering-machine having suitable number-wheels, a handle, a hand-machine frame supporting the handle, a plate attached to the
30 handle, means for detachably securing the typographic machine to said plate, and means for turning said number-wheels of the typographic machine operated by movement of
35 said handle, whereby the same printing-head can be used as a typographic machine or as a hand-machine.

14. The combination with the frame and head of a numbering-machine, of a printing-plate having a printing-opening therein, one end of the plate bent upward at 51, the other
45 end of said plate having a spring extension, an adjustable gage thereon, and a base-plate to one end of which the outer end of said extension is secured, there being space between the printing-plate and the base-plate to receive the card or ticket to be printed on.
50

15. The combination with the frame and head of a numbering-machine, of a printing-plate having a printing-opening therein, one end of the plate bent upward at 51, the other
55 end of the plate having a spring extension, an adjustable gage thereon, and a base-plate to one end of which the outer end of said extension is secured, there being space between the printing-plate and the base-plate, the base-plate having a yielding pad below the opening in the printing-plate.
60

16. The combination with the frame and head of a numbering-machine, of a printing-plate having a printing-opening therein, one
65 end of the plate being bent upward at 51, the other end of the plate having a spring extension, an adjustable gage thereon, and a base-

plate to one end of which the outer end of said extension is secured, the other end of the base-plate extending beyond the printing-plate and having a downward bevel and a tapering end to facilitate introduction of cards. 70

17. The combination with the frame and head of a numbering-machine, of a printing-plate with a spring extension narrower than the printing-plate, a base-plate below the printing-plate and having connection with the spring extension at the end remote from the printing-plate, and a gage on the spring extension. 75 80

18. The combination with the numbering-machine grooved frame, a printing-plate, a printing-head, an ink-pad and holder, levers operated by movement of the head for moving the ink-pad and holder, standards projecting from an edge of each vertical leg of said frame and forming a pivot-support for the ink-pad holder. 85

19. The combination of a numbering-machine U-shaped steel frame grooved throughout its length and of uniform transverse cross-section throughout its length, a printing-plate, a printing-head, and ink-pad and pad-holder, levers operated by movement of the head for moving the ink-pad and holder, standards projecting from an edge of each vertical leg of said frame and forming a pivot-support for the ink-pad holder. 90 95

20. The combination with the grooved frame of a numbering-machine, of a printing-plate extending a little beyond the frame and having an upwardly-bent edge, a numbering-head, an ink-pad holder, a pivot for said holder, levers for operating the holder, and horizontal standards projecting from the grooved frame and supporting the pivot above the projection of the printing-plate. 100 105

21. The combination with a numbering-machine frame, a printing-plate, an extension thereof, a base-plate near to the extension and connected thereto only at the end remote from the frame, the extension and the base being adapted to be grasped by the hand as a handle. 110 115

22. The combination of a numbering-machine frame, a plate 11 extending across the machine at right angles to its axis, said plate having an extending arm with rack-teeth, an arm with gear-teeth meshing with the rack, a plurality of guide-pins for plate 11 near opposite ends thereof, and a single spring serving to raise said plate. 120

23. A number-wheel having a cut-away segment from its periphery to the axis-opening, a cylindrical pivot-opening, a drop-cipher segment having a pivot extension with bearing in the pivot-opening, means for normally limiting the outward swing of the drop-cipher segment, said means being removable to allow a further swing, the pivot extension being cut away so as to be released from its bearing by such further swing. 125 130

24. A number-wheel having a cut-away seg-

ment extending to the shaft-opening, a removable drop-cipher section pivotally supported within the space left by the cut-away segment, in combination with a ratchet-wheel 5 connected to the number-wheel, a segment of the ratchet-wheel being separate from the rest of the wheel and secured to the drop-cipher section so as to be removable therewith.

25. A number-wheel having a cut-away segment 10 ment extending to the shaft-opening, a removable drop-cipher section pivotally supported within the space left by the cut-away segment, a stop limiting the normal movement of the drop-cipher section and when removed 15 allowing further outward movement of the drop-cipher section, the pivot of the drop-cipher section being cut away within its bearing, whereby after said further movement the drop-cipher section can be raised out of its 20 position within the cut-away segment.

26. A number-wheel having a cut-away segment extending to the shaft-opening, a removable drop-cipher section pivotally supported within the space left by the cut-away segment, 25 a stop limiting the normal movement of the drop-cipher section, and when removed allowing further outward movement of the drop-cipher section, the pivot of the drop-ci-

pher section being cut away within its bearing, whereby after said further movement the 30 drop-cipher section can be raised out of its position within the cut-away segment, in combination with a ratchet-wheel connected to the number-wheel, a segment of the ratchet-wheel being separate from the rest of the 35 wheel, and secured to the drop-cipher section so as to be removable therewith.

27. In an automatic typographic numbering-machine adapted to be set up with type in a form, the combination of frame 1 with 40 smooth holes 25 therein, a non-rotary axis supported by said frame, number-wheels on the axis, and loose wheel-protecting side plates 23 having projecting pins 24 fixed to said plates and adapted to easily enter and 45 move from said holes while remaining fixed rigidly to the plates, whereby said plates when not surrounded by type matter are easily removed.

In testimony whereof I affix my signature 50 in presence of two witnesses.

EDWIN G. BATES.

Witnesses:

CHARLES M. CATLIN,
G. W. BALLOCH.

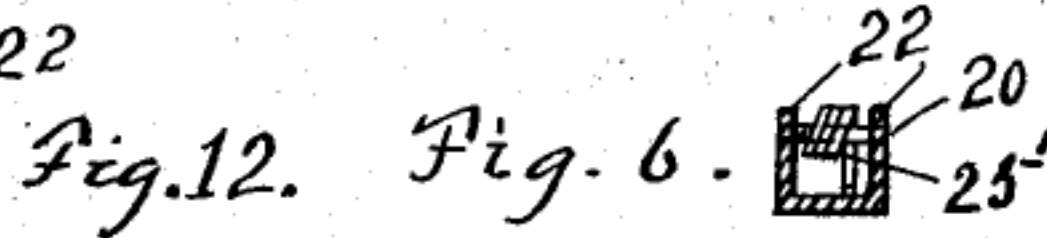
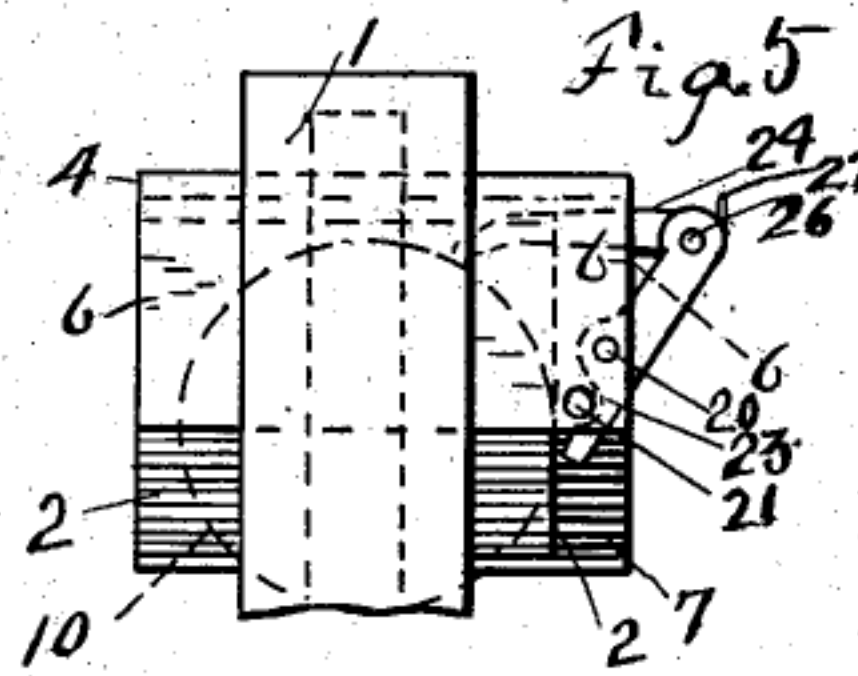
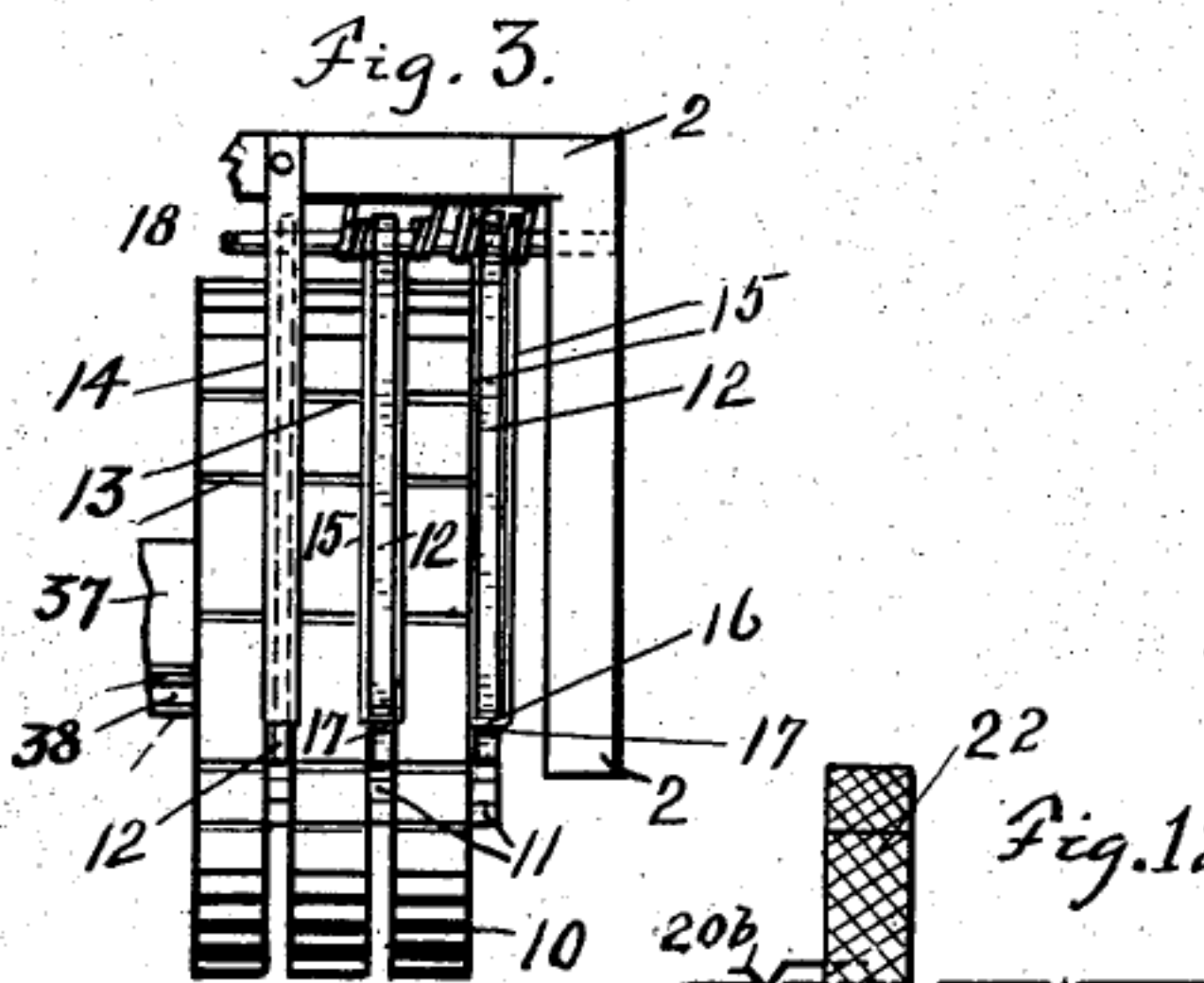
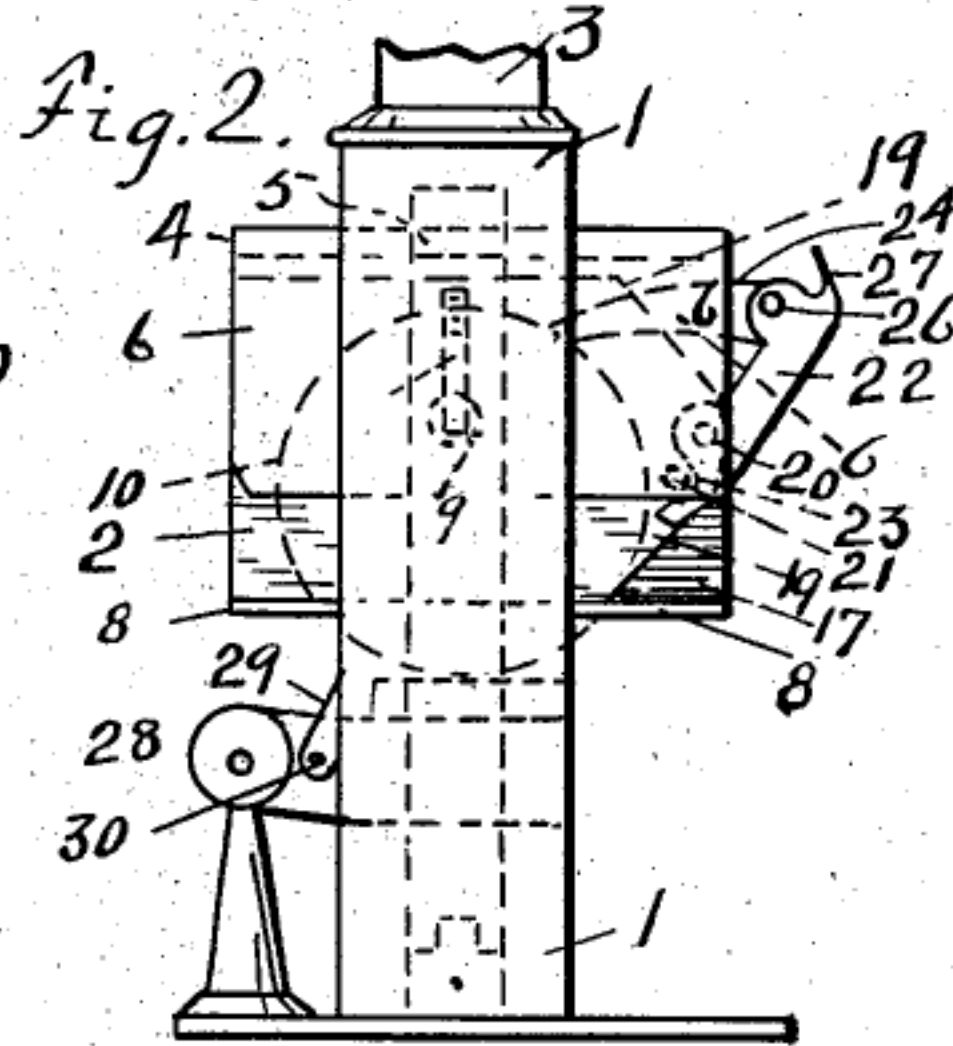
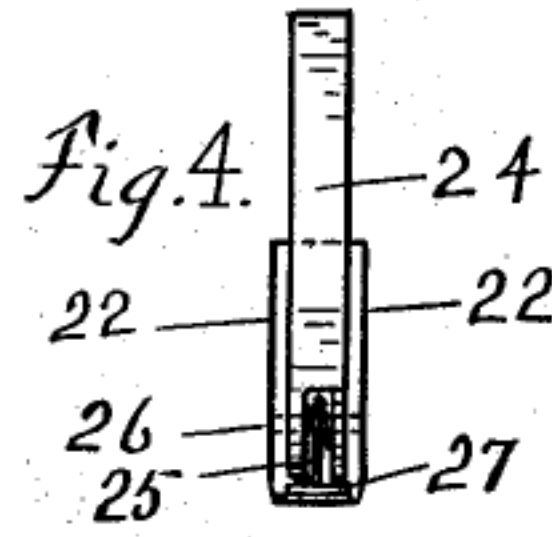
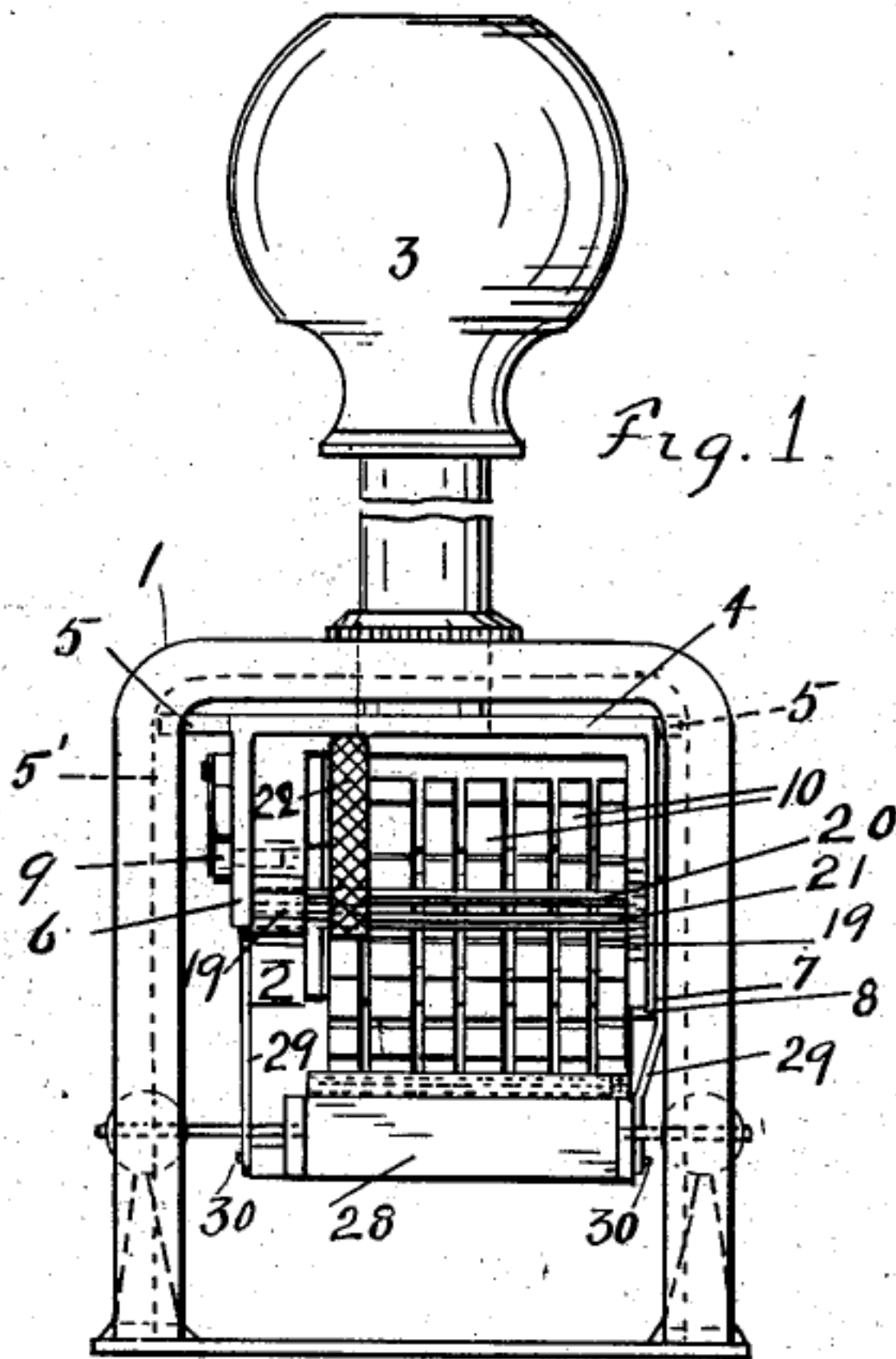
NEXT ITEM

E. G. BATES.
NUMBERING OR SIMILAR MACHINE.

APPLICATION FILED MAR. 29, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses
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Inventor
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NUMBERING OR SIMILAR MACHINE.

APPLICATION FILED MAR. 29, 1902.

NO MODEL.

2 SHEETS—SHEET 2.

Fig. 7.

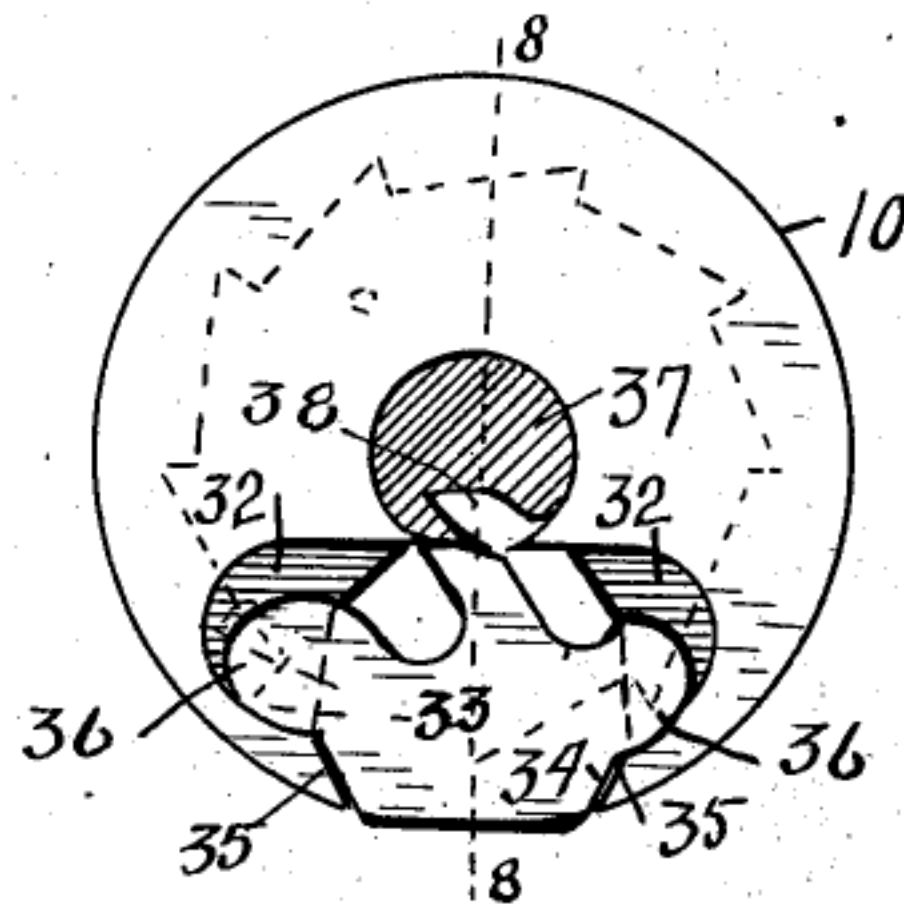


Fig. 8.

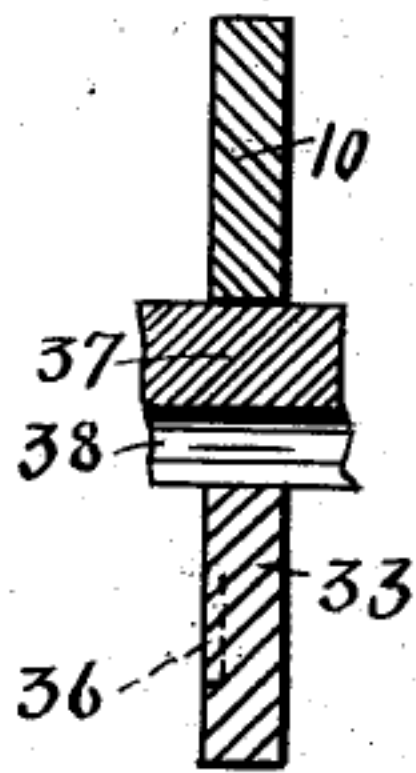


Fig. 10.



Fig. 9.

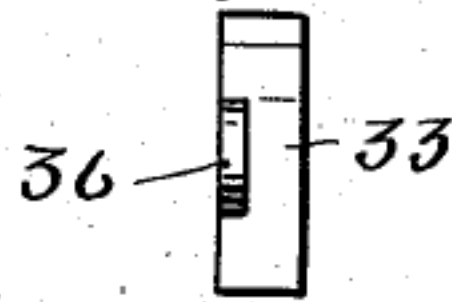
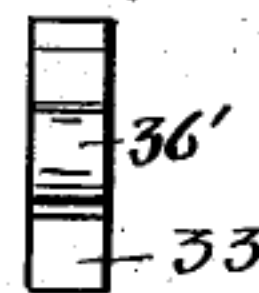


Fig. 11.



WITNESSES

A. H. Matur.

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UNITED STATES PATENT OFFICE.

EDWIN G. BATES, OF NEW YORK, N. Y., ASSIGNOR TO THE BATES MACHINE COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

NUMBERING OR SIMILAR MACHINE.

SPECIFICATION forming part of Letters Patent No. 721,276, dated February 24, 1903.

Application filed March 29, 1902. Serial No. 100,557. (No model.)

To all whom it may concern:

Be it known that I, EDWIN G. BATES, a resident of New York, in the county of New York and State of New York, have invented certain
5 new and useful Improvements in Numbering or Similar Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable
10 others skilled in the art to which it pertains to make and use the same.

This invention relates to numbering and similar machines; and the main object of the invention is to provide improved wheels and means for controlling them.

15 In the accompanying drawings, Figure 1 is a side view, and Fig. 2 a view at right angles thereto, of a machine embodying the improvements. Fig. 3 is a partial side view of the
20 printing-head looking from the opposite side to that shown in Fig. 1. Fig. 4 is a plan view of a printing-wheel-operating device. Fig. 5 shows a modification. Fig. 6 is a section on line 6 6 of Figs. 2 and 5. Fig. 7 is a side view
25 showing an improved drop-cipher and means for supporting it in its wheel. Fig. 8 is a vertical section on line 8 8 of Fig. 7. Fig. 9 is an edge view of the drop-cipher block. Fig.
30 10 is a central vertical sectional view of a modified wheel. Fig. 11 is an edge view of a modified drop-cipher block, and Fig. 12 shows a modification.

The present improvements are shown in a machine similar to the hand numbering-machine disclosed in the patent granted me June
35 11, 1901, No. 676,084—namely, a hand-machine frame the head of which is removable and adapted also for use in a printing-press with or without surrounding type. The improvements are, however, not confined to use in
40 numbering-machines having said adaptability.

In the drawings, 1 is the frame of a hand-machine, which supports a printing-head 2 by handle 3 and plate 4, having lugs 5, which
45 move up and down in the groove 5' of frame 1, and depending flanges 6 7, the latter having a ledge 8, as in said patent.

9 is a spring-pressed pin for locking the head in position.

50 10 represents printing-wheels, on the peripheries of which are engraved figures, letters,

or other devices, as common in this class of machines.

Between adjacent wheels are shown thin washers 11, which are preferably provided
55 with ratchet-teeth. These are or may be utilized in turning the wheels and also for engagement by the pawls 12 for preventing accidental movement of the wheels. I prefer, however, to provide the peripheries of the print-
60 ing-wheels themselves with teeth 13 to be engaged for advancing the wheels when the improved wheel-advancing device hereinafter described is used.

In Fig. 3 the pawl 12 at the left is shown
65 with a flat spring 14, supported from the frame of head 2, as common. It is found advantageous in some cases, particularly in connection with the holding-pawls of the units and
70 tens wheels, (they being most used,) to mount and form the springs and the pawls as in Fig. 3—that is, the springs are made of spring-wire having two members 15 parallel with the
75 pawls, said members being connected at their outer ends by transverse members 16, which bear on the holding-pawls near their free
80 ends, preferably within notches 17 in the backs of the pawls. Said notches lower the outer ends of the springs, so that both longitudinal members lie along the pawl and entirely inside of the outer face or back of the
85 pawl. This is a protection to the spring and makes it impossible for the spring to slip off of the pawl at either side. It will be seen that it is of great advantage in connection with the
90 fine and accurate mechanism of the herein-described type of apparatus, and especially in connection with the wheels and holding-pawls of the wheels most constantly brought
95 into use, to have a delicate but reliable spring for such pawl, and this is given by the long spring-wire side members of my holding-spring operatively connected to the pawl
near its outer end. Should one of the longitudinal members of this wire spring become
100 broken or weak accidentally or by long use, the remaining number will prevent failure of operation for a considerable time. The opposite ends of the members 15 are coiled on pin 18 on opposite sides of the pawls, the ends of the coiled portions bearing against the frame of the head 2, so as to press the

holding-pawls forward. These wire springs arranged as described last longer and are for some other reasons preferable to the flat springs. I do not limit myself to the use of both forms of spring conjointly nor to the use of notches 17, although these are preferred.

I will now describe the improved wheel-operating device above referred to. In Figs. 1, 2, and 3 the frame of the head 2 is shown with lateral extensions 19, in which are supported two rods or pins 20 21. On pin 20 is pivoted a lever 22, preferably U-shaped in cross-section and having a curved extension or bearing 23 in position to engage the stop-pin 21. Near the upper end of part 22 is pivoted a pawl 24, adapted to engage the teeth 13 for advancing the printing-wheel adjacent to which the pawl stands, said pawl being pressed toward the wheel by the coiled spring 25 on the pivot 26 of the pawl. Preferably the upper end of lever 22 is extended beyond the pivot inclining toward it, as at 27. This partly covers the spring and forms a convenient part to press upon when moving the device by pressing the finger against it. The pivoted end of pawl 24 is slotted, as most clearly seen in Fig. 4, spring 25 surrounding the pivot within said slot. A spring 25' on the pivot of arm 22 presses said arm against its stop-pin 21. The lever 22 is adapted to slide on its pivot-pin so as to stand directly beside either printing-wheel which it is desired to advance to any desired point arbitrarily. Consequently said wheels may be advanced in any desired order and extent by this single device, which in the complete machine is in position to be reached and operated directly by the hand of the operator. The pawl when thus operated advances its wheel by a single tooth or step or by a succession of equal steps when the operator presses on lever 22 more than once.

In case the numbering-head employed has not a frame with extensions 19, as above described, the pivot-pin 20 and stop-pin 21 may be supported in the flanges 6 7 of plate 4, as indicated in Fig. 5.

28 is an ordinary ink-pad-holding device, 29 being links pivoted thereto at 30 for throwing back the pad.

Means may be provided to insure that pawl 24 on lever 22 shall come to rest in exact alinement with the desired ratchet-wheel. For example, rod 20 may be provided with notches 20^a, spaced in accordance with the wheels, lever 22 carrying a yielding spring 20^b, the angle end of which drops into a notch just as the pawl is in operative position. Said spring should not be strong enough to make movement of arm 22 difficult, but strong enough to give a distinct tendency to stop the arm at each notch.

The printing-wheels or some of them are provided with devices known in the art as

"drop-ciphers." According to the present improvement each wheel having such cipher has a section removed from the periphery to the axis-opening, as most clearly shown in Fig. 7. Preferably said opening has side extensions 32 on opposite sides of the opening, said extensions 32 extending only part way through the body of the wheel—that is, said extensions are merely depressions in the wheel-body. Within the opening is a floating drop-cipher block 33, having at its outer end bevels 34, carefully fitted to corresponding bevels 35 in the body of the wheel. On each side of block 33 are thin wings 36, adapted to rest within depressions 32, the latter being considerably larger than the wings 36. Block 33 also has an arm cooperating with axis 37, having a groove 38, in well-known manner. It will be seen that the cipher-block is neither pivoted nor carefully guided within its socket, and that the only careful fitting required is at the bevels 34 35, and that no force or skill is required to put the blocks in position. Block or section 33 is retained in the recess, but is otherwise disconnected from the body of the wheel.

When the printing-wheels are placed side by side on the axis or when ratchet-wheels are secured to the printing-wheels, the cipher-blocks are kept from falling from their openings. In Fig. 7 the position of such a ratchet-wheel is indicated in dotted lines.

The modifications indicated in Figs. 10 and 11 differ from the form described only in that the extensions of the opening in the wheel extend entirely through the body of the wheel and the wings 36' of the block have the same thickness as the wheels.

In my patented machine above referred to the "No." printing-plate used in the typographic number-head and forming a part of the wheel-advancing device is, when in the hand-machine frame, also used in advancing the wheels, being connected to the lever which operates the ink-pad holder. In the present case said "No." plate is not shown, being omitted by reason of the non-automatic device shown for advancing the wheels; but evidently it is not essential that all of the wheels be moved by the said non-automatic device, in which case the "No." plate and the connection shown in said patent might be retained for moving some of the printing-wheels.

I claim—

1. The combination in a numbering-machine, of a plurality of printing-wheels, an axis, and a step-by-step operating-pawl, a lever-support therefor, a single pin on which said lever is mounted, on which it can turn, and also move longitudinally of the pin, said lever and pawl being movable to advance either wheel one tooth only at a time, said lever forming a hand operating device carrying the pawl.

2. The combination, in a numbering or simi-

lar machine, of a plurality of printing-wheels, an axis, a single pawl for advancing said wheels, a spring pressing the pawl toward the printing-wheel adjacent to which it stands, a body to which the pawl is pivoted, said pawl and body being directly hand-operated, a support on which said body is adapted to slide, a spring normally retracting said body and pawl, and a stop for said body.

3. The combination in a numbering-machine of a plurality of rotatable printing-wheels, a common means for advancing the wheels in any desired order and step by step to any extent, said means consisting of pawl 24, body 22, a pivot-pin 20 on which body 22 can turn and also slide longitudinally of the pin, and the stop-pin 21 for said body.

4. The combination of numbering-wheels, a pawl 24 having the forked end, the body 6, U shape in cross-section, into which said forked end enters, a pivot therein for the pawl, a spring on the pivot pressing the pawl forward, the pivot-pin 20 on which the body can turn and along which it can slide, and a spring on said pin normally retracting the pawl and body.

5. The combination of numbering-wheels, a pawl 24 having the forked end, the body 6, U shape in cross-section, into which said forked end enters, a pivot therein for the pawl, a spring on the pivot pressing the pawl forward, the pivot-pin 20 on which the body can turn and along which it can slide, a spring on said pin normally retracting the pawl and body, and stop-pin 21 parallel with pin 20.

6. A printing-wheel for numbering and similar machines having an opening from its periphery to its axis-opening, side extensions to said opening, and a drop-cipher block having supporting-wings, smaller than said extensions to the opening, adapted to rest loosely in said extensions, the drop-cipher block being held in said opening but otherwise disconnected from the wheel, as set forth.

7. A printing-wheel for numbering and similar machines having an opening from its periphery to its axis-opening, side extensions to said opening extending but partly through the wheel, and a non-pivoted drop-cipher block having supporting-wings, smaller than said extensions to the opening, adapted to rest loosely in said extensions, the drop-cipher block being disconnected from the wheel but held in said opening, as set forth.

8. A printing-wheel, for numbering and similar machines, having an opening from the periphery to the axis-opening of the wheel, overhanging bevels on opposite sides of the opening at the periphery of the wheel, a non-pivoted freely-moving drop-cipher block in said opening, and disconnected from the body of the wheel, said block having bevels at its outer end corresponding to said undercut bevels, whereby the loose detached cipher-block will be exactly guided into position at the end of its outward movement.

9. The combination, in a numbering or similar machine, of one or more rotatable printing-wheels, a holding-pawl for each wheel, a pivot for the pawl or pawls, a wire spring for each pawl having duplex longitudinal members nearly as long as the pawl, and a transverse connecting member bearing on the free end of its pawl, the other ends of the longitudinal members of the spring being wound on the pivot of the pawl, on opposite sides of the pawl, as set forth.

10. The combination, in a numbering or similar machine, of one or more rotatable printing-wheels, a holding-pawl for each wheel, a pivot for the pawl or pawls, a notch in the pawl near its free end, a wire spring for each pawl having duplex longitudinal members, and a transverse connecting member bearing on the free end of its pawl in said notch, the other ends of the longitudinal members of the spring being wound on the pivot of the pawl, on opposite sides of the pawl, as set forth.

11. In a numbering-machine, rotatable printing-wheels, holding-pawls for all of said wheels, a pivot for the pawls, a wire spring, or wire springs, for one or more of said pawls, each of such springs having two longitudinal members nearly as long as its pawl, a transverse member connecting the outer ends of the longitudinal members, and itself resting in a notch near the outer end of its pawl, whereby the body of the wire spring is lowered below the outer side of its pawl, and is protected from accidental bending, the unconnected ends of such spring being wound on the pivot of its pawl on opposite sides of the pawl, as set forth.

12. The combination, in a numbering or similar machine, of a plurality of printing-wheels, an axis, a pawl for advancing said wheels, a body to which the pawl is pivoted, a pivotal support for said body parallel with the axis and on which said body is adjustable lengthwise of the support and axis, and means for causing the pawl to stop in exact alignment with the desired ratchet-wheel.

13. A printing-wheel having a recess, and a non-pivoted drop-cipher block therein disconnected from the body of the wheel and being loose in the recess adapted to move toward and from the periphery of the wheel and also to move slightly sidewise in the plane of the wheel in the recess, said wheel having undercut guiding-bevels, and said block having corresponding cooperating bevels at its outer side, whereby as the block is moved outwardly in the recess it is accurately guided forward or backward into position as necessary and arrested by said bevels.

14. A printing-wheel having a recess, and a non-pivoted drop-cipher block therein disconnected from the body of the wheel and held in the recess loosely whereby it can move to and from the periphery of the wheel in the recess and can move slightly sidewise in

the plane of the wheel, and shoulders for arresting the block in exact printing position.

15. A printing-wheel having a recess, a floating drop-cipher block in the recess, and
5 shoulders for guiding the block into position and arresting it.

In testimony whereof I have signed this

specification in the presence of two subscribing witnesses.

EDWIN G. BATES.

Witnesses:

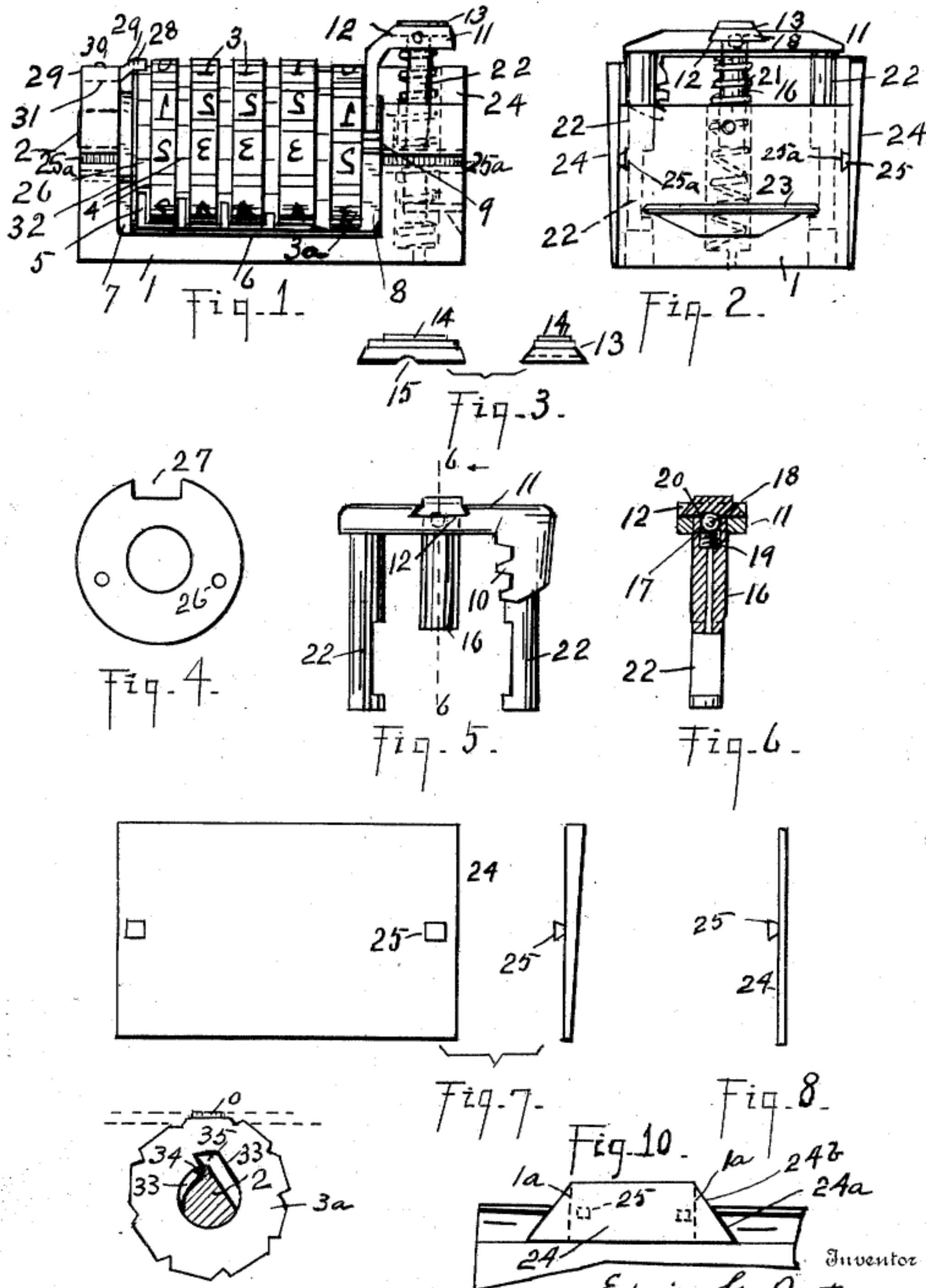
HENRY C. WARE,
CARRIE E. WYLIE.

NEXT ITEM

E. G. BATES.
 TYPOGRAPHIC NUMBERING MACHINE.

APPLICATION FILED DEC. 9, 1903.

NO MODEL.



Witnesses.

Anna C. Jack.
Benj. R. Battin

Edwin G. Bates,

By *Charles M. Catlin,*
Attorney

UNITED STATES PATENT OFFICE.

EDWIN G. BATES, OF NEW YORK, N. Y., ASSIGNOR TO THE BATES MACHINE COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

TYPOGRAPHIC NUMBERING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 759,656, dated May 10, 1904.

Application filed December 9, 1903. Serial No. 184,442. (No model.)

To all whom it may concern:

Be it known that I, EDWIN G. BATES, a resident of New York, in the county and State of New York, have invented certain new and useful Improvements in Typographic Numbering-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

This invention relates more especially to automatic numbering-machines of the character adapted to be set in a form of type, with surrounding type-matter, on a printing-cylinder or other bed. Some features of the invention are, however, equally applicable to other forms of numbering-machines for hand use or otherwise.

The main object of the invention is to provide improved features of construction, simplifying and increasing efficiency of the machines.

In the accompanying drawings, Figure 1 is a front side view of the machine with the front side plate removed. Fig. 2 is an end view looking at the right end of the machine, the side plates being in position. Fig. 3 shows side and end views of a removable printing-block. Fig. 4 is a side view of a washer. Fig. 5 is a side view of the plunger detached. Fig. 6 is a sectional view on line 6-6 of Fig. 5. Fig. 7 shows side and end views of a side plate. Fig. 8 shows an end view of a different form of side plate. Fig. 9 is a side view of the drop-wheel; and Fig. 10 is a detail view, on a smaller scale than the other figures, showing a numbering-machine secured by dove connection to a suitable body, as a printing-cylinder.

Numeral 1 indicates the main body of the frame of the machine, which supports the shaft 2 for the number-wheels 3, each of which has attached to it a propelling-ratchet 4.

5 indicates the stepped pawl, which in this case has a pawl for each number-wheel except the last one, 3^a, at the right, which may

be turned when needed by the hand or by any suitable tool. The number of printing-wheels may be varied and more or less of them may be operated by the stepped pawls. Part 6 is a swinging frame carrying the stepped pawls and having arms 7 and 8, which have bearings and swing on the shaft 2. Arm 8 has gear-teeth 9, adapted to be engaged by teeth 10 on an arm depending from plunger 11. As thus far described the construction is not new.

I improve the plunger by providing in it a groove or recess 12 with overhanging edges preferably of simple dovetail form and preferably extending transversely to the length of the head of the plunger, in which groove is fitted a removable type-block 13, having a cipher or other printing character 14 on its face, which when the plunger is depressed by the act of printing in the usual way the face of said block moves downward to the printing-plane of the wheels 3. Block 13 also serves to increase the thickness of the plunger, whereby the latter will be given its full movement when depressed in printing, allowing the main body of the plunger to be thinner than would be otherwise required. When the impression-surface becomes worn, it is merely necessary to remove the block and substitute a new one of proper thickness. To hold the block removably but with sufficient firmness to prevent accidental falling or working out, a groove 15 is formed in its inner side and transverse to its length. The plunger carries firmly attached to itself a pin 16, which terminates at the bottom of the groove 12 and which has in this end a socket 17, in which is a polished-steel or other body having a rounded part extending into the groove 12, preferably a polished-steel ball 18, pressed by a spring, so as to project above the bottom of groove 12.

When block 13 is inserted, the body 18 will be depressed and the block will enter until the ball is pressed into groove 15. The block can then be removed only by a stronger pres-

sure. The ball is held in its socket by the extension over its surface above its center of the metal of the socketed pin 16 at 20. Preferably said pin is pressed into a tight-
 5 fitting smooth hole in the plunger-head; but this mode of securing it is not essential. Said pin extends into spring 21, which occupies a socket in body 1, as common. The plunger-head also has two legs 22, notched to receive
 10 the securing-staple 23, this being an old feature.

On each of the open sides of frame 1 is placed a metal side plate 24, preferably tapering in thickness, as shown, whereby the outer
 15 faces will be in radial planes when the machine is mounted on a cylindrical form. These plates may, if desired, be reversed, whereby the machine will be made thicker at the bottom than at the top, in which case the machine may be held in place in the form by
 20 being entered in a dovetail groove. Another way is to form a dovetail connection between a supporting cylinder or body by having a suitable groove 24^a in said body and by extending the side plates of the numbering-machine to form tapering ends 24^b, which fit into
 25 said dovetail groove on the supporting-body. In Fig. 10 the dotted lines 1^a denote the ends of the numbering-machine and the triangular parts formed by said dotted lines the bevel sides, and the base-lines are the extension of the side plates.

The side plates are secured by overhanging or dovetail projections 25, one at each end,
 35 which fit corresponding grooves in the frame 1. Projections 25 are at the longitudinal center of the plates, whereby the plates may be reversed, as above described.

Part 26 is a washer on shaft 2 between the
 40 ratchet of the first wheel 3 and arm 7 and having notch 27 adapted to receive and support in the printing-plane the inner end 28 of body 29, extending over the unit-wheel ratchet, secured to the frame by one or more screws
 45 30 and having any desired printing character on it. Body 29 is shown extending into a groove 31 of the frame; but this is not essential. The washer is held from rotation by a pin 32 or otherwise. In some cases the pivot-pin for the
 50 number-wheel-retaining pawls (not shown herein) is utilized for said purpose. The fixed washer forms a support for the inner end of body 29 and also prevents body 29 moving sidewise out of position in case the holding
 55 screw or screws work loose.

One or more of the number-wheels may be bodily movable back from the printing-plane (instead of having drop-ciphers, as is more common.) The cipher (not shown) will be on
 60 the wheel over opening 35. In this case but one wheel, 3^a, is thus depressible or movable. The shaft 2, where it carries the depressible wheel 3^a, has its circular periphery cut away

at 33, leaving an undercut tooth 34, which in the position shown supports the wheel in
 65 printing position, but which can be and normally is moved into and engaged with the wall of a side opening 35 in the wheel, holding the wheel back until purposely released.

Having described my invention, what I
 70 claim as new, and desire to secure by Letters Patent, is—

1. In a numbering-machine, number-wheels, means for advancing the wheels including a plunger moved by the act of printing, a groove
 75 in the plunger, a block in said groove, a spring-pressed engaging and holding device for said block, and a pin supported in the plunger back of the groove, said pin having a socket for said holding device and its spring. 80

2. In a numbering-machine, number-wheels means for advancing the wheels including a plunger moved by the act of printing, a groove
 85 in the plunger, a block in said groove, a spring-pressed steel ball forming an engaging and holding device for said block, and a socketed body connected to the plunger back of said groove and carrying said ball and its spring. 85

3. In a numbering-machine, a plunger having a dovetail groove, a block fitting the same,
 90 said block having a depression in its bottom, a steel ball projecting into the dovetail groove, and a spring behind said ball in a socket in the plunger, said socket being in the end of a pin in an opening in the head of the plunger. 95

4. In a numbering-machine, a plunger having a head with a dovetail groove therein and having legs 22, a pin 16, a spring in a socket
 100 of the machine-frame for moving the plunger outward, said spring surrounding said pin 16, a printing-block in the groove, a ball bearing against the block and a spring back of the ball.

5. A plunger having a removable printing-block, a spring-pressed holding device for the
 105 block, a body carried by the plunger and having a socket carrying the holding device and its spring.

6. In a numbering-machine, the frame, the shaft therein, the wheels on said shaft, the
 110 notched washer also on said shaft back of the first or unit wheel, a body 29 secured to the frame and extending into the notch of the washer, body 29 having at the end adjacent the unit-wheel a printing character. 115

7. In a numbering-machine, the frame, the shaft therein, the wheels on said shaft, the
 120 notched washer also on said shaft back of the first or unit wheel, a body 29 secured to the frame and extending into the notch of the washer, body 29 having at the end adjacent the unit-wheel a printing character, and means to prevent rotation of the washer.

8. The numbering-machine frame, tapering side plates, a supporting-body for said frame
 125 and its side plates extending longitudinally of

the frame, and the supporting-body having means to engage the tapering sides.

5 9. The numbering-machine frame, and side plates tapering in thickness and reversible as described.

10 10. The numbering-machine frame with dovetail grooves, side plates, and dovetail projections on the plates, the plates tapering in thickness and reversible as described.

15 11. In a numbering-machine the side plates, the dovetail projections at the ends thereof, and parts grooved lengthwise of the side plates when they are in position of use to receive and hold said projections and plates.

15 12. A shaft, a number-wheel having a shaft-opening, the shaft being cut away where said wheel stands to form an undercut supporting and holding tooth 34 and to permit backward

movement of the wheel on the shaft, and a side opening 35 in the wheel communicating 20 with the shaft-opening, into which said tooth can enter to permit the wheel to drop.

13. In a numbering-machine, a plunger having a groove in its face, a removable block in said groove and extending above the face of 25 the plunger, a socket back of said groove, a ball, and a spring pressing the ball, both being in the socket and the ball engaging the block.

In testimony whereof I have signed this 30 specification in the presence of two subscribing witnesses.

EDWIN G. BATES.

Witnesses:

HENRY C. WARE,
B. B. CONRAD.

NEXT ITEM

PATENTED JULY 26, 1904.

NO MODEL.

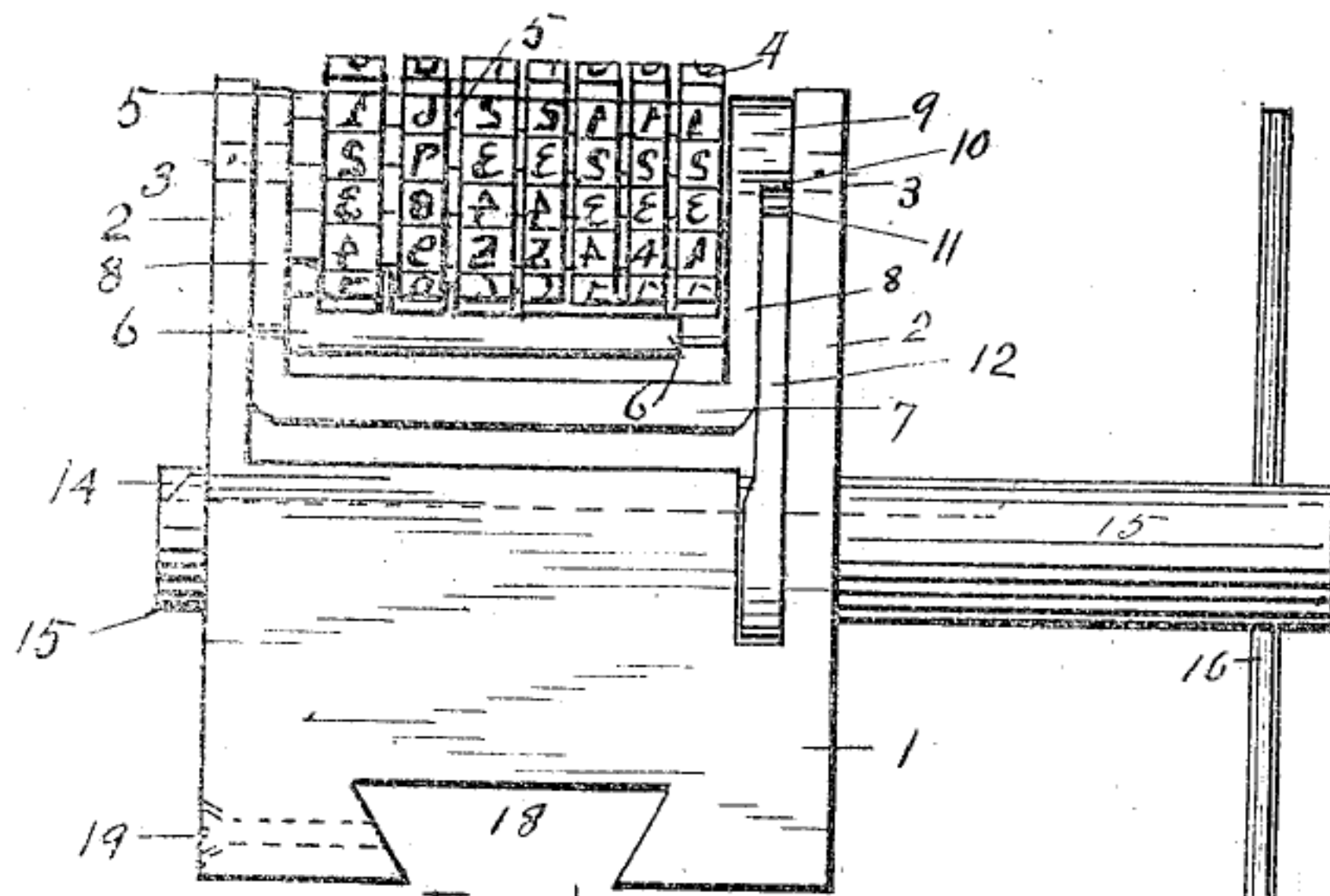


Fig. 1.

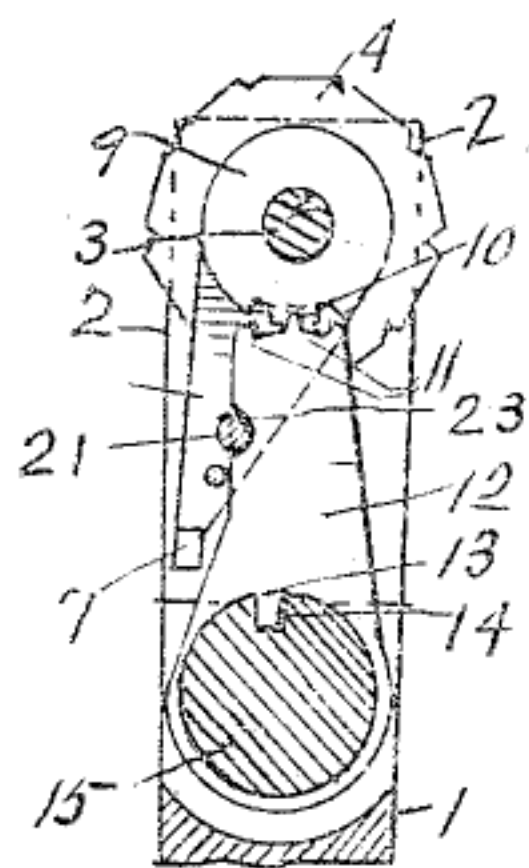


Fig. 3.

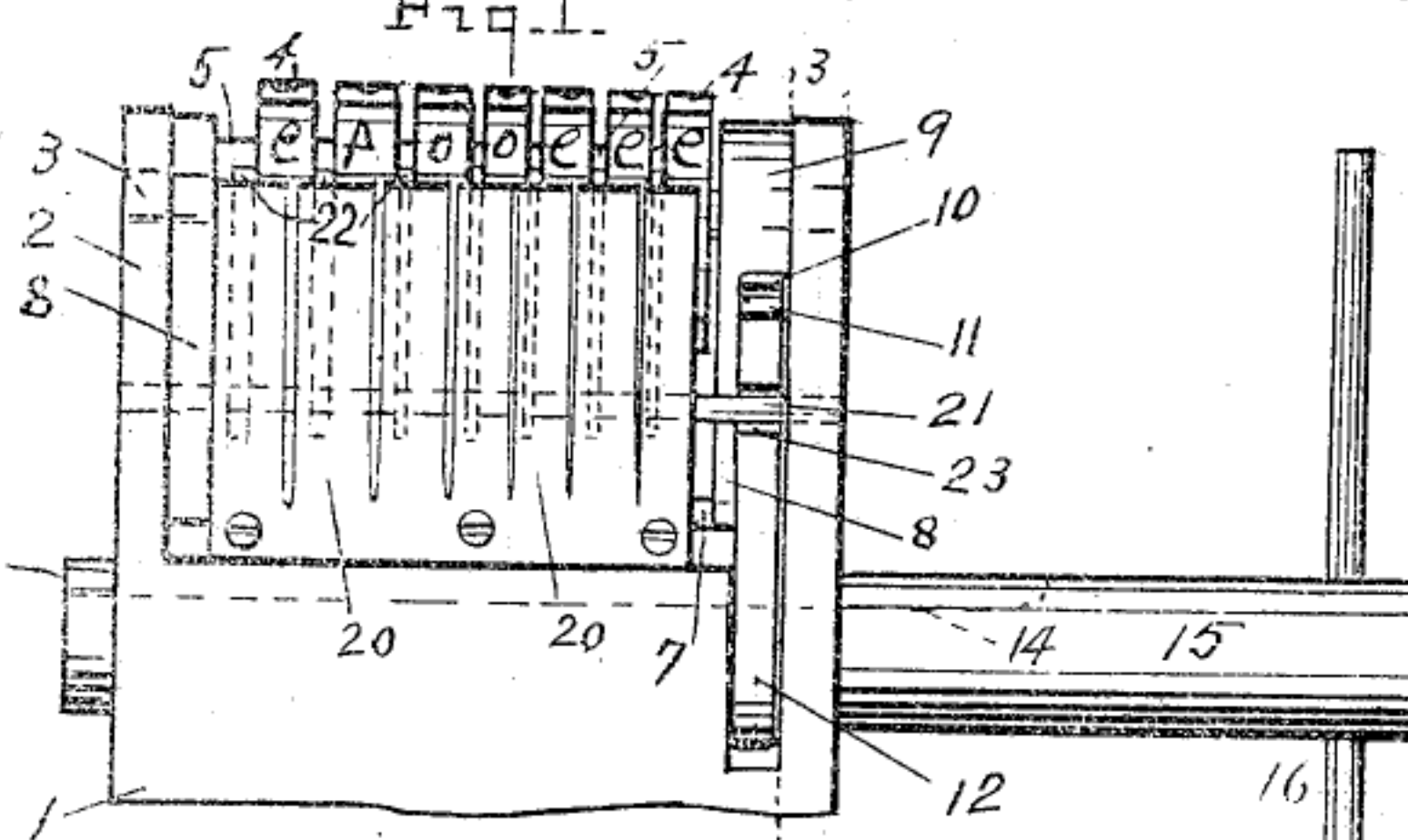


Fig. 2.

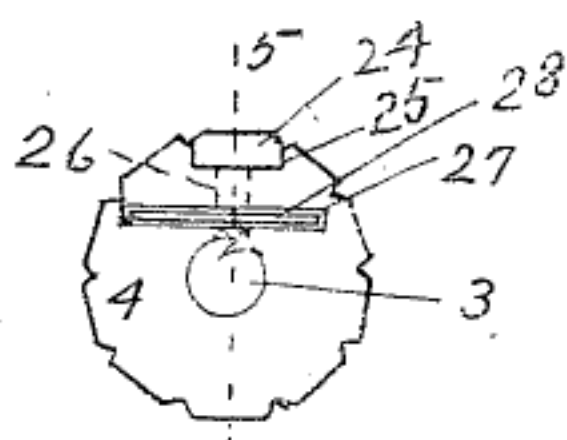


Fig. 4.

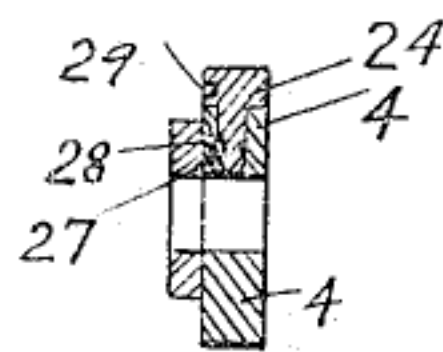


Fig. 5.

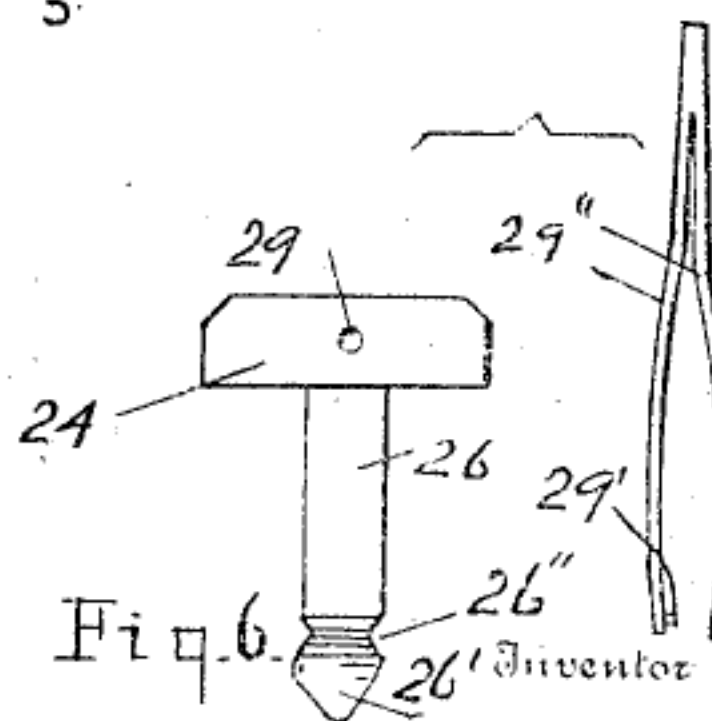


Fig. 6.

Witnesses

Benj. R. Garlin
Anna C. Garlin

By *Edwin G. Bates*
Charles M. Catlin Attorney

UNITED STATES PATENT OFFICE.

EDWIN G. BATES, OF NEW YORK, N. Y., ASSIGNOR TO THE BATES MACHINE COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

NUMBERING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 766,134, dated July 26, 1904.

Application filed November 17, 1903. Serial No. 181,548. (No model.)

To all whom it may concern:

Be it known that I, EDWIN G. BATES, a resident of New York, in the county and State of New York, have invented certain new and useful Improvements in Numbering-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

This invention relates to numbering-machines.

The main object of the invention is to provide improved actuating means and to improve the type-wheels, as set forth.

In the accompanying drawings, Figure 1 is a front view of the machine on an enlarged scale. Fig. 2 is a rear view partly broken away. Fig. 3 is a sectional view on line 3 3 of Fig. 2. Fig. 4 is a side view of a numbering-wheel with its ratchet omitted. Fig. 5 is a sectional view on line 5 5 of Fig. 4; and Fig. 6 is an enlarged side view of a removable type and, on a reduced scale, a tool for handling it.

Numeral 1 denotes a metal body, the sides of which preferably taper, the body being thicker at top than at the bottom. (See Fig. 3.) The body has standards 2, which support the grooved shaft 3 of the number or like printing wheel, each of which has a ratchet 5 secured to it, as usual.

Numeral 6 denotes a well-known form of stepped pawl, being shown with teeth to engage the ratchets of the first four wheels 4, whereby the first four wheels will be automatically brought into use, as usual in this class of machines. Succeeding wheels will be or may be advanced manually as needed. The stepped pawl-plate is supported in a swing-frame 7, which has arms 8, supported and adapted to turn on said shaft 8. At one end of the frame 7 arm 8 has a side extension 9, having teeth 10 on its inner side, which teeth are swing-propelling means and are engaged by similar teeth on the end of arm 12, which arm has a tooth 13, engaging a tooth 14 in an auxiliary operating-shaft 15, which occupies an opening in body 1 below the swing 7. As shown, the body has a thickness at the top

about equal to the diameter of the wheels and is thinner at the bottom. The shaft which is in the same vertical plane as the main shaft and within said thin body has suitable means, as handle 11, whereby the auxiliary shaft and arm 12 can be turned forward and backward through an arc sufficient to operate the stepped pawls to advance the wheels operated by said pawls, as above stated. The use of the auxiliary shaft 15, supporting it within the body itself, is very advantageous and particularly in cases where circumstances require a machine of as small thickness as practicable. In the present construction all the operating means except the projecting part of the operating-shaft do not extend beyond the body.

The frame 1 at its bottom is provided with an undercut groove 18, adapted to fit a similarly-shaped bar in a suitable support. (Not shown.) 19 denotes a fastening-screw therefor.

Referring to Fig. 2, 20 denotes springs normally holding wheels 4 from accidental movement. 21 is a pin extending across the frame and supporting wheel-holding pawl 22. 23 is a notch in arm 12, in which said pin 21 rests when arm 12 has moved to the end of its path in that direction.

In this machine, especially when more than five number-wheels are used, I employ in the first three wheels following the units-wheel any suitable drop-cipher, preferably that shown in my Patent No. 721,276, in which the drop-cipher is controlled by a groove in the number-wheel shaft. The following wheels are not provided with drop-ciphers, but with stationary though removable type-blocks on which ciphers or other characters are formed. Such a wheel is shown in Figs. 4, 5.

Numeral 24 denotes the block in notch 25 of the wheel and having a straight shank 26, which extends into a radial hole in the wheel. As indicated above, the removable block when in the notch is stationary and is not a "drop-cipher" block. One face of the wheel has a groove 27, in which is secured a spring 28, which crosses said hole near a side thereof, and the end 26' of the shank is tapered and is grooved at 26", whereby the spring automat-

ically engages the shank when it is pushed in and holds it and the block in place, and the spring is automatically disconnected by a pull on the block. The head of the block has means by which the block can be securely grasped by tweezers—for example, a small hole 29 in the block to receive a corresponding pin 29' on one leg 29'' of the tweezers. Hole 29 is so located that it is not covered when the block is in the notch. The groove of shaft 3 is useful for operating the drop-ciphers; but the type-blocks 24 do not require such groove in the shaft.

What I claim is—

1. In a numbering-machine having number-wheels, a shaft therefor, and means for advancing the wheels, said means having a pawl-carrying swing centered on the same shaft as said wheels, an auxiliary shaft located outside of the periphery of the number-wheels, the auxiliary shaft being geared to the swing for advancing the wheels.

2. In a numbering-machine having number-wheels, a shaft therefor, and means for advancing the wheels, said means consisting of a swing centered on the same shaft as said wheels and adapted to turn on said shaft, said swing having a gear-segment, an auxiliary shaft located outside the periphery of the number-wheels, the auxiliary shaft being geared to the swing-gear.

3. In a numbering-machine having wheels, a shaft, a swing centered loosely on said shaft, swing-propelling means, an auxiliary shaft located outside of the periphery of the wheels and geared to the swing.

4. The combination of number-wheels, a thin supporting-body, a shaft for the wheels in said body, stepped pawls, a body carrying said pawls and centered loosely on said shaft, an auxiliary shaft in the vertical plane of the first shaft, means for moving the auxiliary shaft, and an operating connection between the said shaft and the body carrying the stepped pawls.

5. A number-wheel having a notch in its periphery, a stationary but removable block in its notch, a shank for the block, a hole in the wheel for the shank, a groove in the wheel intersecting said hole, and a spring in the groove, the spring automatically engaging with and automatically disengaging from the shank by the mere act of inserting or removing the block.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

EDWIN G. BATES.

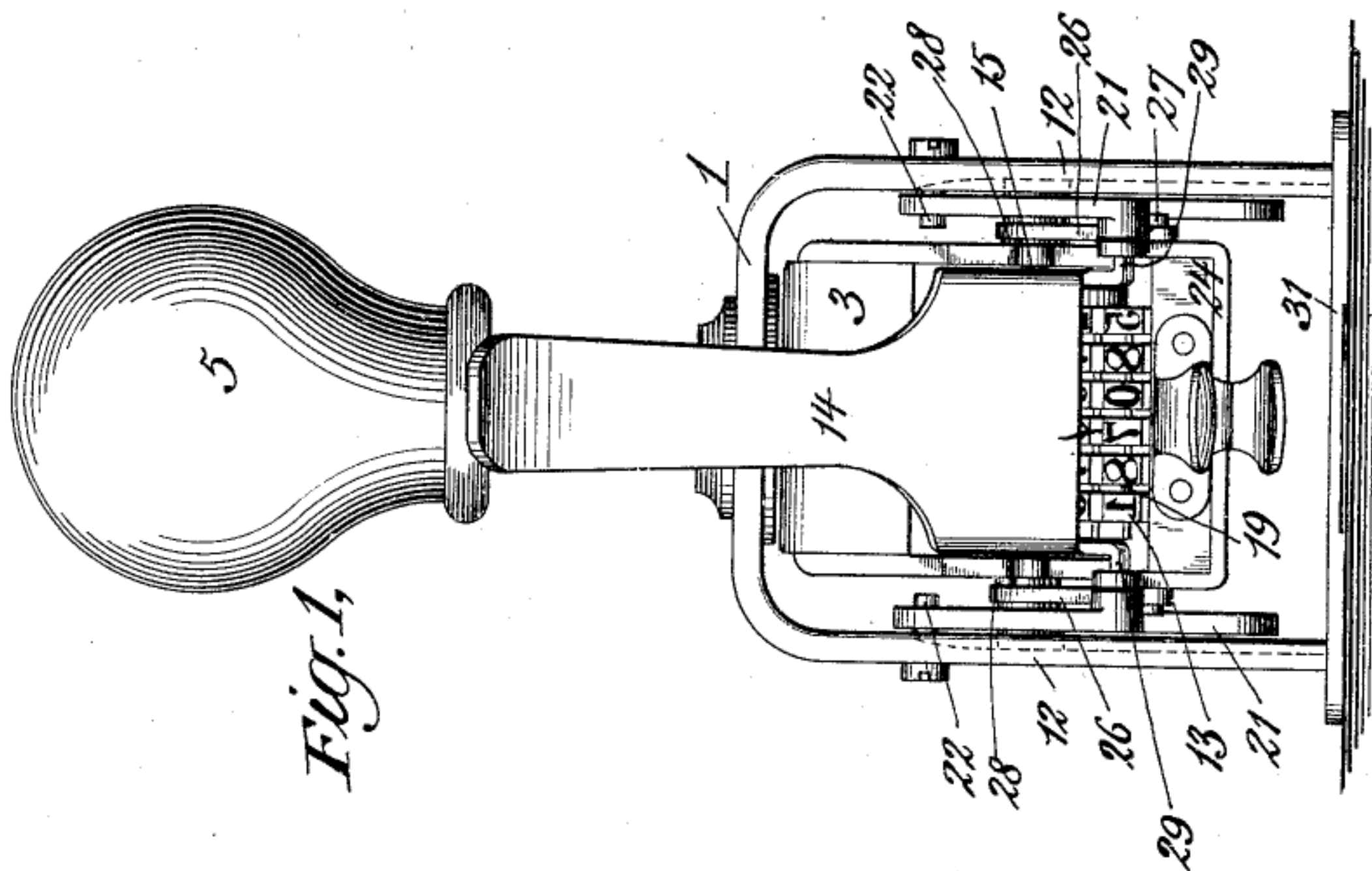
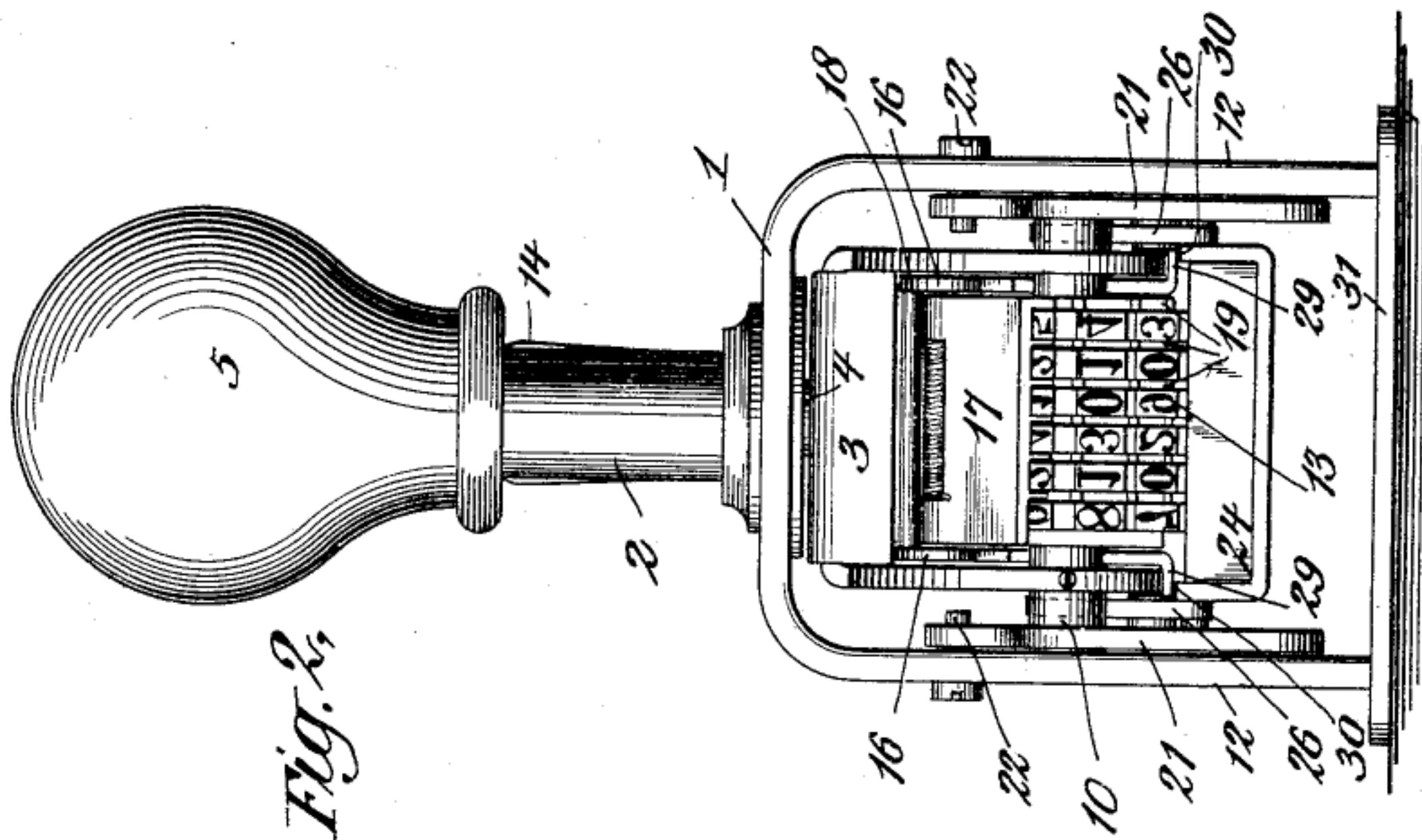
Witnesses:

HENRY C. WARE,
CARRIE E. WYLIE.

NEXT ITEM

E. G. BATES.
NUMBERING MACHINE.
APPLICATION FILED JULY 7, 1904.

2 SHEETS—SHEET 1.

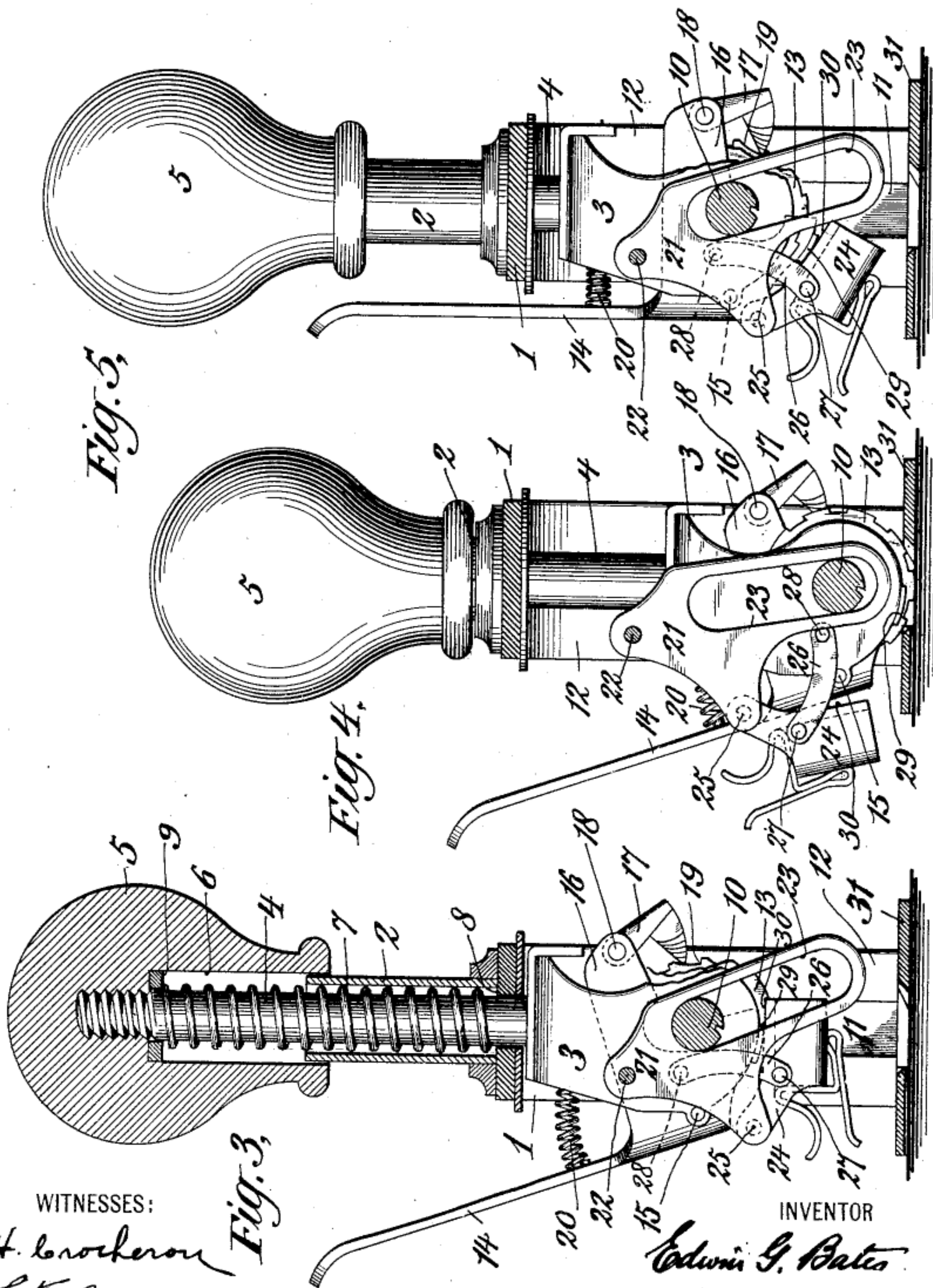


WITNESSES:
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C. F. Carrington

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Chapin Raymond Mable
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E. G. BATES.
NUMBERING MACHINE.
APPLICATION FILED JULY 7, 1904.

2 SHEETS—SHEET 2.



WITNESSES:
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UNITED STATES PATENT OFFICE.

EDWIN G. BATES, OF NEW YORK, N. Y., ASSIGNOR TO THE BATES MACHINE COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

NUMBERING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 784,729, dated March 14, 1905.

Application filed July 7, 1904. Serial No. 215,614.

To all whom it may concern:

Be it known that I, EDWIN G. BATES, a citizen of the United States of America, and a resident of the city, county, and State of New York, have invented certain new and useful Improvements in Numbering-Machines, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

My invention relates to improvements in numbering-machines, and particularly to that class of hand numbering-machines in which the mechanism for rotating the numbering-wheels to bring different numbers opposite the printing-point is actuated by means of a hand-lever. In this style of machine depression of the wheel-carrier for a printing operation has no effect on the mechanism for rotating the wheels, the latter mechanism being actuated by an independent hand-operated lever. Provision must be made during the first portion of the depressing movement of the wheel-carrier to swing the ink-pad and its supporting mechanism out of the path of movement of the wheel-carrier and for returning the ink-pad during the latter portion of the return movement of the ink-carrier, so as to supply fresh ink for a new printing operation. The normal rest position of the ink-pad is therefore against the printing-wheel, and as the most convenient time for rotating the numbering-wheels to bring around new numbers for subsequent printing operations is during the normal return or rest position of the parts it will follow that some means should be arranged for moving the ink-pad sufficiently at least to clear the peripheries of the wheels during the rotation thereof.

One of the main objects of this invention, then, is to provide a simple means whereby the ink-pad may be carried away from contact with the numbering-wheels while they are being rotated.

Other objects of my invention are to simplify the actuating mechanism for the ink-pad carrier, to simplify the construction of the working mechanism, to reduce the number of parts employed, and to reduce the size of the

machine and the length of stroke required for a printing operation to a minimum.

I will now proceed to describe a numbering-machine embodying my invention and will then point out the novel features in claims.

In the drawings, Figure 1 is a view in front elevation of a machine embodying my invention. Fig. 2 is a view in rear elevation of the same. Fig. 3 is a view in side elevation of the operating mechanism of the machine, the stationary frame and handpiece being shown in central vertical section. Fig. 4 is a similar view with the parts in a different position and the plane of section through the frame being taken in front of the handpiece and operating-stem. Fig. 5 is a similar view with the parts in still another position.

The stationary form of the machine comprises an inverted-U-shaped body-piece 1, a tubular extension 2, and a base-plate 3. The wheel-carrier comprises a frame 3 and an operating-stem 4. The operating-stem passes through a perforation in the U-shaped body-piece and through the tubular extension. A handpiece 5 is secured to the upper end of the operating-stem 4, as by a screw-threaded connection. The handpiece 5 is counter-bored, as at 6, to receive the upper end of the tubular extension 2, and a coiled spring 7, arranged around the stem 4 and between it and the tubular extension 2, bears at its lower end against a shoulder 8, formed in the main frame of the machine, and a shoulder 9, formed as the base of the counterbore 6. The spring and stem are thus completely housed, while free reciprocal movement of the handpiece 5 and wheel-carrier with respect to the stationary frame is permitted.

The wheel-carrier 3 supports a wheel-shaft 10, whose ends protrude and are received in slots 11 in the inner faces of the legs or standards 12 of the stationary frame. Suitable numbering-wheels 13 are mounted upon the said wheel-shaft 10 and are arranged to be rotated by pawls in a manner well known in this type of machine. The wheel-carrier 3 also forms a support for a hand-lever 14, pivoted thereto at 15, said lever having arms

16, which carry the wheel-actuating pawls 17. The wheel-actuating pawls 17 are pivoted to the arm 16 at 18 and are arranged to engage ratchet-teeth 19, with which the numbering-wheels 13 are provided, as is usual. A spring 20 acts as a return-spring, against the resistance of which the hand-lever is depressed to actuate the numbering-wheels.

The machine is provided with two operating-arms 21, one on each side of the machine and pivotally connected to the legs or standards of the stationary frame at 22. These operating-arms swing quite freely from their pivots 22, but are maintained in their proper positions by means of a slotted engagement with the wheel-shaft 19. The said arms have each a slot 23, through which the ends of the shaft pass and on which the shaft may freely play. The operating-arms 21 form a swinging support for an ink-pad 24, which is pivoted to the said arms by pins 25. Links 26, of which there are two, one upon each side of the machine, are pivotally connected at their opposite ends to the ink-pad carrier at 27 and the wheel-carrier at 28. When pressure is applied to the handpiece to force the wheel-carrier down to the printing position, as shown in Fig. 4 of the drawings, the first downward movement of the said carrier throws the ink-pad carrier downward and outward away from contact with the peripheries of the numbering-wheels. The links 26 operate to swing the ink-pad carrier around on its axis 25, while the cam-like action of the shaft 19 in the slot 23 throws the operating-arms, and hence the ink-pad carrier, out in the same direction bodily. The result will be that the ink-pad will not only clear the periphery of the wheels, but the pad and its carrier will be thrown clear of the actuating-lever 14. This is all clearly shown in Fig. 4 of the drawings. The actuating-lever, it will be understood, is carried down with the wheel-carrier, being mounted on and supported by the same. Reciprocation of the wheel-carrier for the printing operation, as above described, will in no wise affect the actuating-lever 14 or the mechanism controlled thereby, which operates to rotate the wheels.

Operation of the lever 14 is arranged to be effected when the machine is in its normal retracted position, in which position the parts are shown in Figs. 1, 2, and 3 of the drawings. To rotate the numbering-wheels, it is necessary to depress the actuating-lever 14, bringing it to a position substantially as shown in Fig. 5 of the drawings, and then permitting it to return under action of the spring 20. It will be remembered, however, that when the parts are in the normal out-of-operation position, as shown in Fig. 2 of the drawings, the ink-pad is in engagement with the periphery of the wheels, and should pressure be applied to rotate the wheels while the pad is in such engagement the result will be a serious

wearing of the pad. To avoid this, I provide the actuating-lever with one or more lugs or projections 29, which are arranged to engage the upper faces 30 of the ink-pad carrier 24. The lugs or projections in the normal position of the parts are just out of contact with the ink-pad carrier, but upon the first movement of the actuating-lever 14 engage the said faces 30 and depress the ink-pad carrier sufficiently to move the ink-pad out of peripheral engagement with the numbering-wheels. During the rest of the movement the lever 14 will complete actuation of the numbering-wheels, giving same a single step-by-step movement at each reciprocation thereof in a manner well known.

By the foregoing arrangement it will be seen that I have provided a very simple mechanism for throwing the ink-carrier clear of the reciprocating parts when the machine is operated for the printing operation, and by the particular arrangement and construction of the parts shown I have been enabled to provide a small compact machine with short standards. It will further be seen that my construction provides a simple and effective means for moving the ink-pad away from the periphery of the wheels when the wheels are revolved to change the numbers brought to a printing position.

It will be obvious that the foregoing is but one embodiment of my invention and that the same is capable of many and varied modifications within the spirit and scope of my invention and, further, that certain parts may be employed in connection with other parts of different construction. Hence I do not desire to be limited only to the precise details of construction and combination of parts herein.

What I claim is—

1. In a machine of the character described, the combination with a stationary frame and a reciprocating wheel-carrier, of an operating-arm pivoted to the stationary frame, and having a slotted connection with a portion carried by the said wheel-carrier, a swinging ink-pad carrier pivotally connected to and carried by the said operating-arm, and a link pivotally connected at its opposite ends with the said ink-pad carrier and wheel-carrier respectively.

2. In a machine of the character described, the combination with a stationary frame, a reciprocating wheel-carrier and a wheel-shaft carried thereby, of an operating-arm pivoted to the stationary frame and having a slotted connection with the said wheel-shaft, a swinging ink-pad carrier pivoted to the said operating-arm, and a link pivotally connected at its opposite ends with the said ink-pad carrier and wheel-carrier respectively.

3. In a machine of the character described, the combination with a stationary frame having legs or standards 12, said legs or stand-

ards having longitudinal grooves 11 therein, a wheel-carrier mounted to reciprocate between said standards, and a wheel-shaft carried thereby, the ends of said shaft extending beyond the said wheel-carrier, and received within said grooves 11, of operating-arms located one each upon each side of the wheel-carrier and between the said wheel-carrier and the said standards, and pivoted to the said standards, said operating-arms having a slotted connection with the said wheel-shaft, a swinging ink-pad carrier pivoted to said operating-arms, and links connected each at their opposite ends with the said ink-pad carrier and wheel-carrier respectively.

4. In a machine of the character described, the combination with a stationary frame and a reciprocating wheel-carrier, of an operating-arm pivoted to the stationary frame and having a slotted connection with a portion carried by the said wheel-carrier, a swinging ink-pad carrier pivotally connected to and carried by the said operating-arm, a link pivotally connected at its opposite ends with the said ink-pad carrier and wheel-carrier re-

spectively, and an actuating-lever carried by said wheel-carrier, said actuating-lever comprising means for imparting a limited movement to the ink-pad carrier.

5. In a machine of the character described, the combination with a stationary frame, a reciprocating wheel-carrier, a wheel-shaft carried thereby, and a wheel-actuating lever, also carried by said wheel-carrier, of an operating-arm pivoted to the stationary frame, and having a slotted connection with the said wheel-shaft, a swinging ink-pad carrier pivoted to the said operating-arm, and a link pivotally connected at its opposite ends with the said ink-pad carrier and wheel-carrier respectively, said actuating-lever having a portion adapted to engage said ink-pad carrier when said lever is moved for a wheel-actuating operation.

In witness whereof I have hereunto set my hand this 28th day of June, 1904.

EDWIN G. BATES.

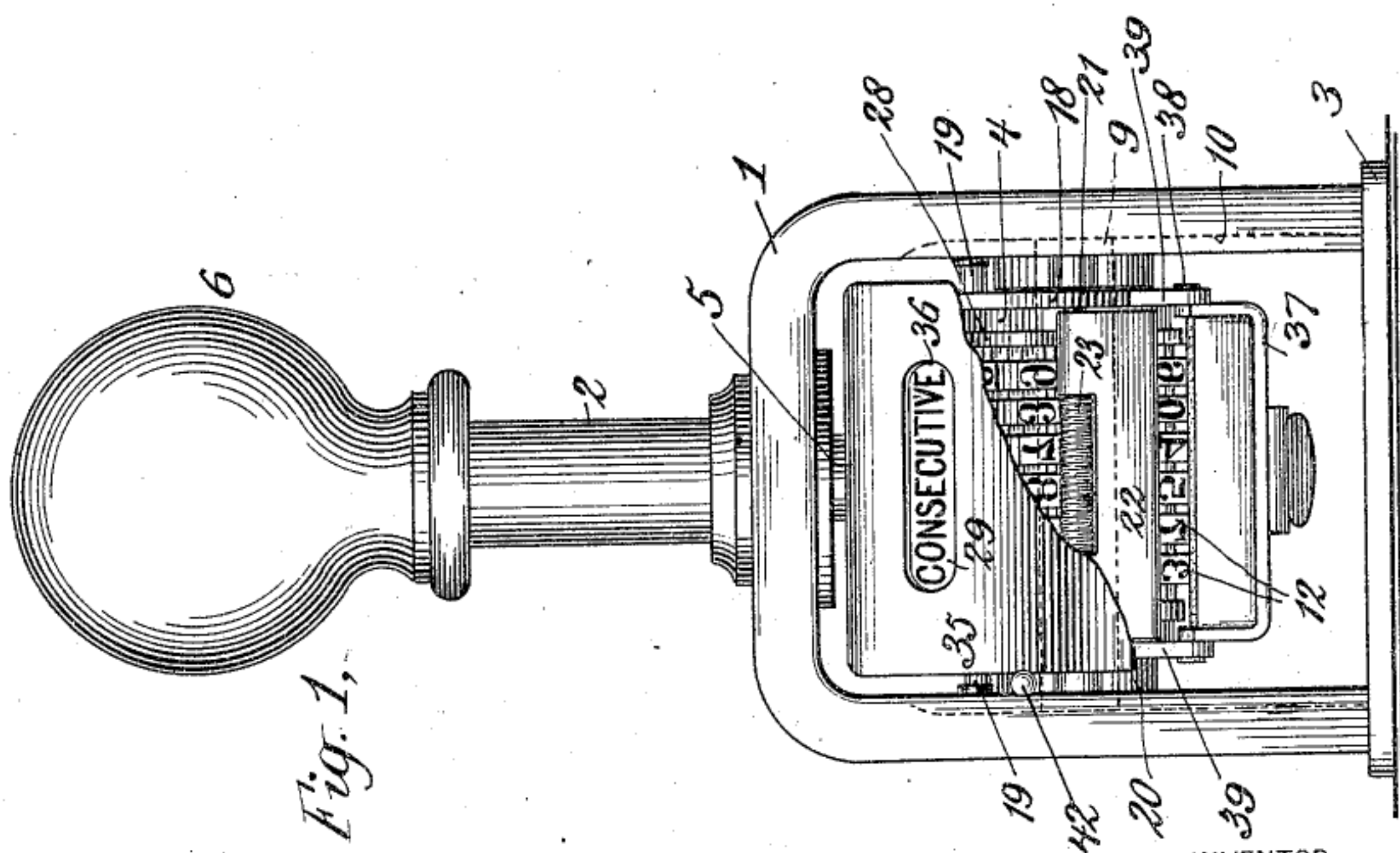
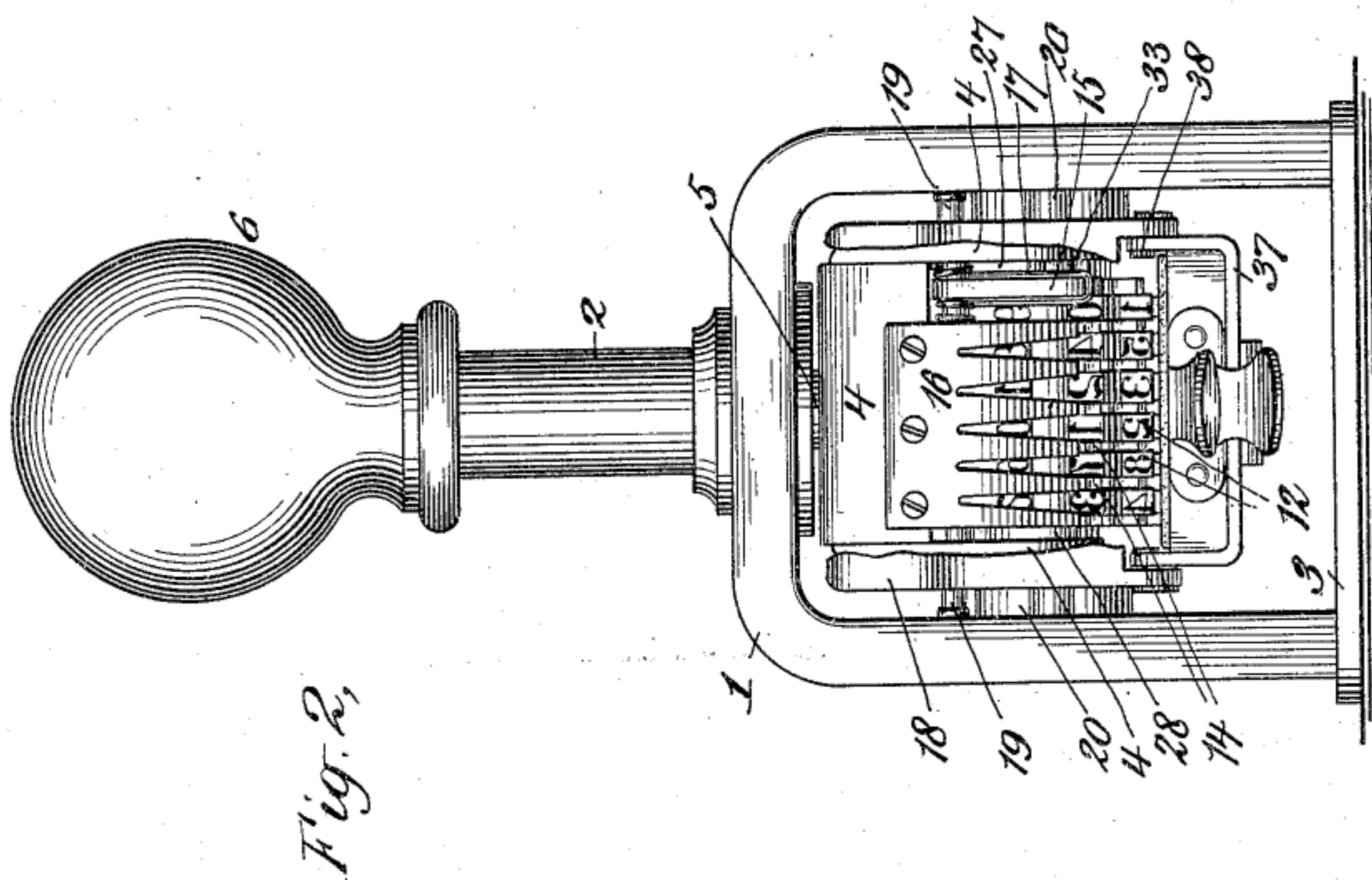
Witnesses:

A. B. CARHART,
C. L. HALL.

NEXT ITEM

E. G. BATES.
NUMBERING MACHINE.
APPLICATION FILED JULY 7, 1904.

3 SHEETS—SHEET 1.



WITNESSES:

Harry L. Goss.
Benj. E. Teale

INVENTOR

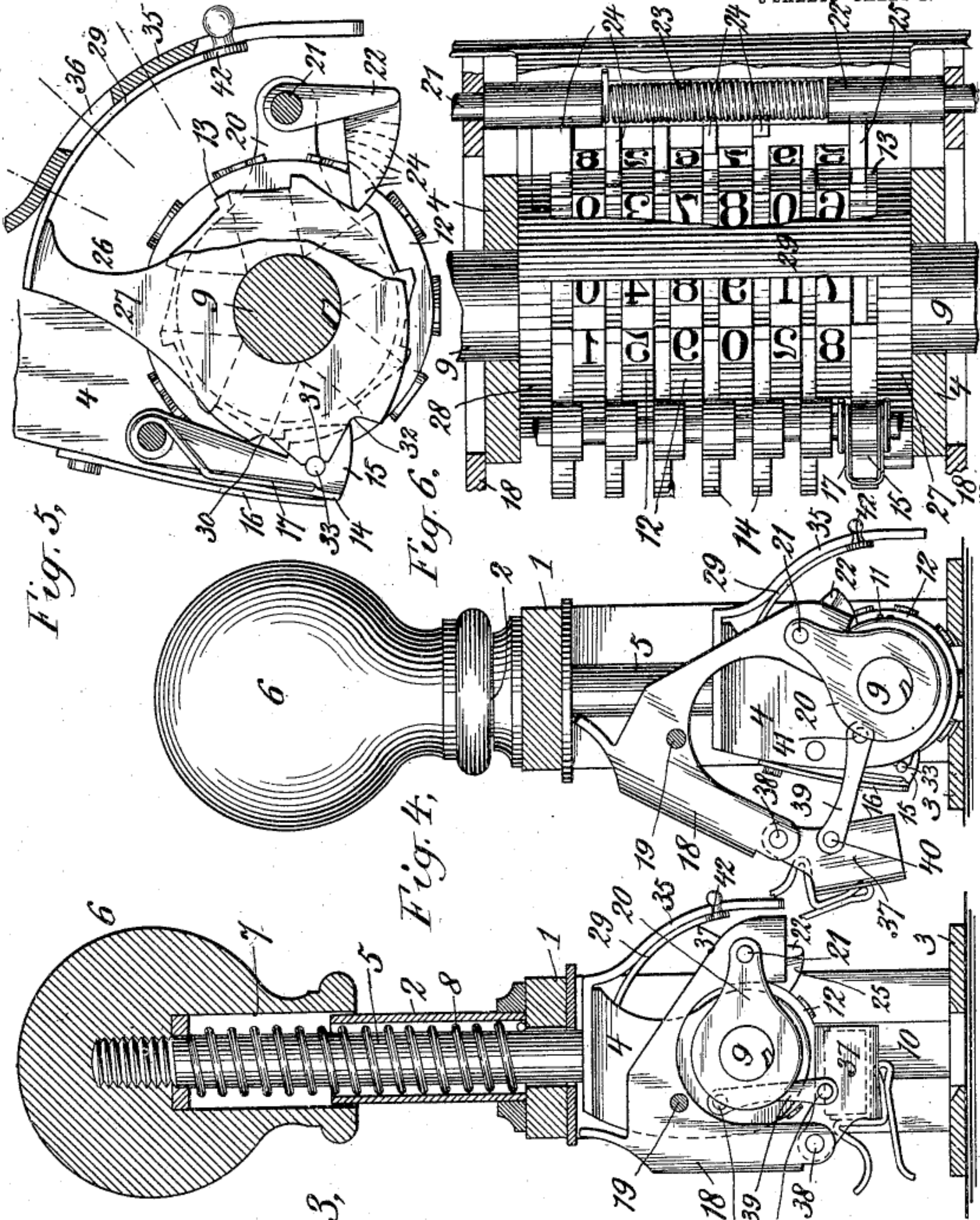
Edwin G. Bates

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E. G. BATES.
NUMBERING MACHINE.
APPLICATION FILED JULY 7, 1904.

3 SHEETS—SHEET 2.



WITNESSES:

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INVENTOR

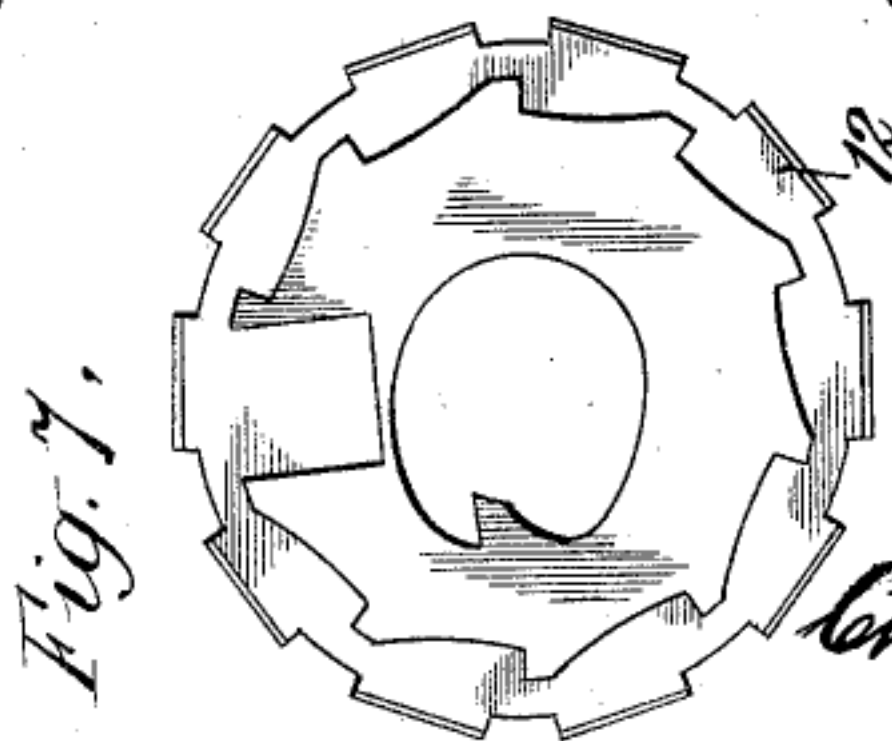
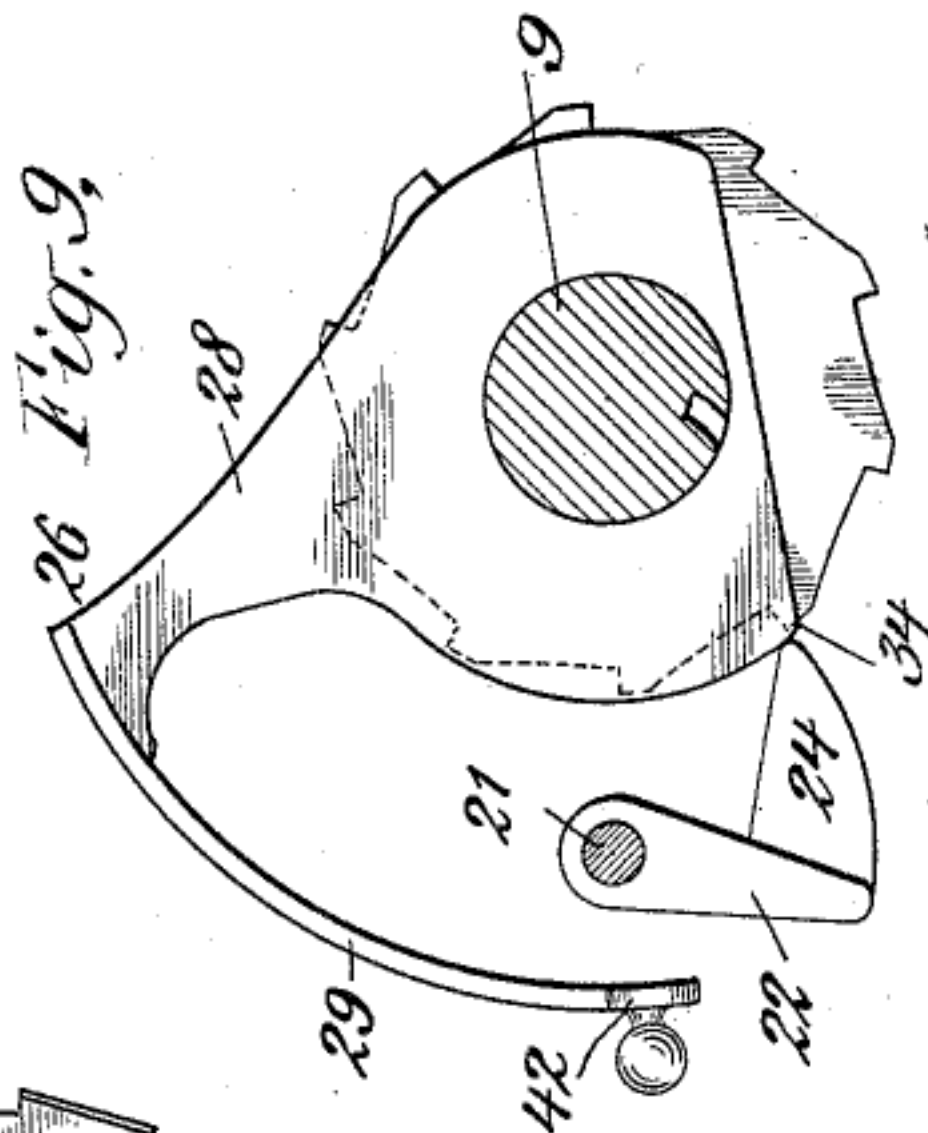
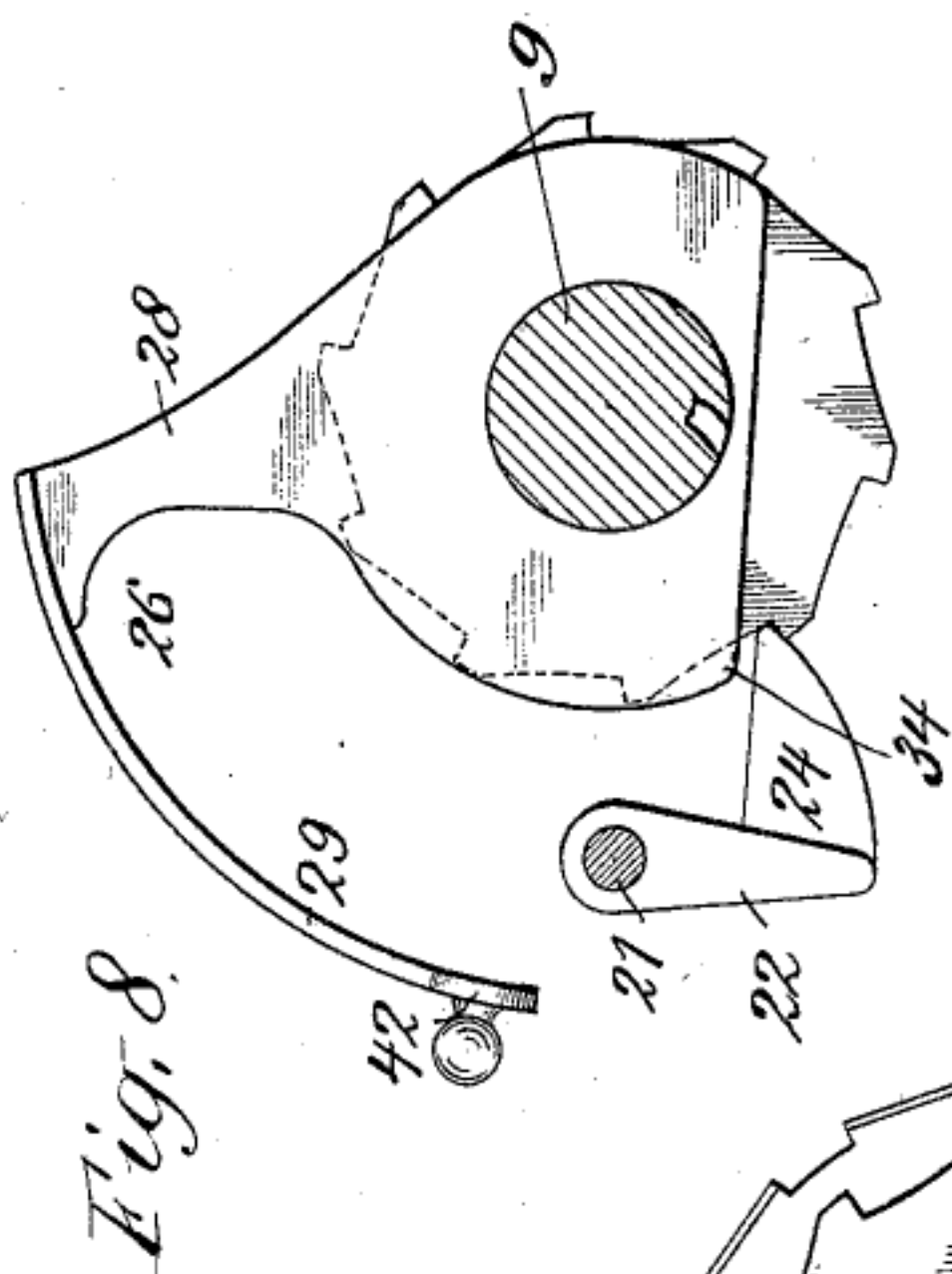
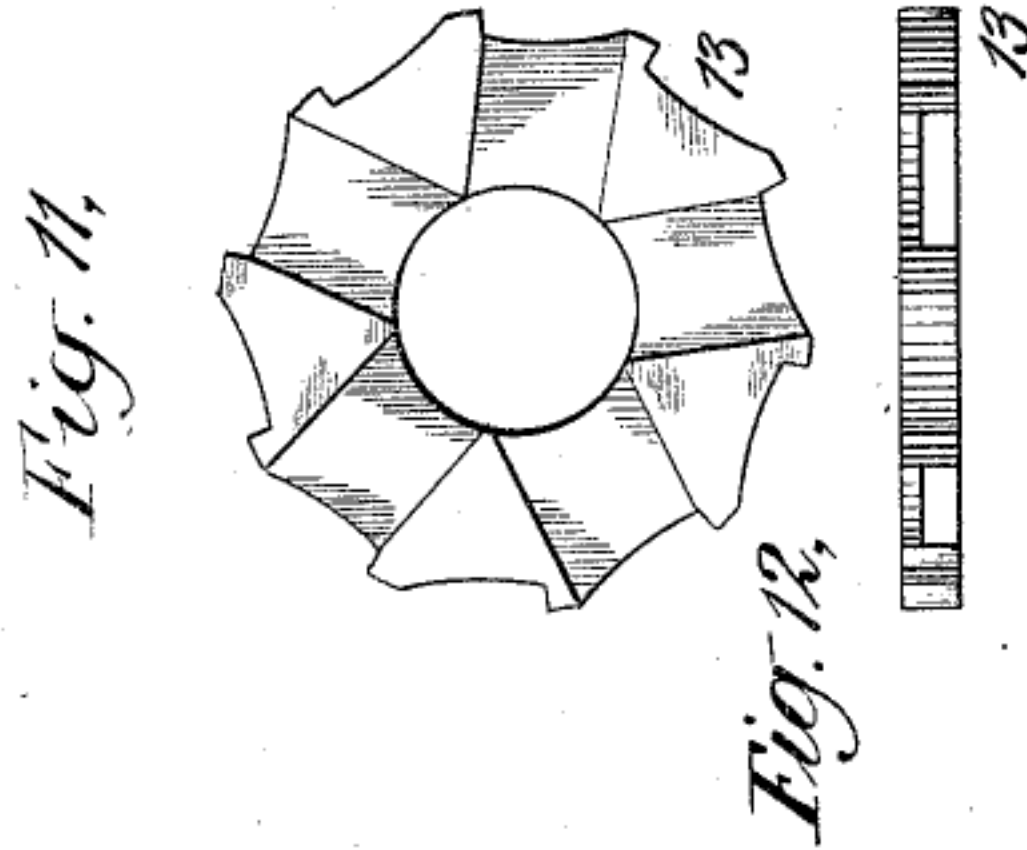
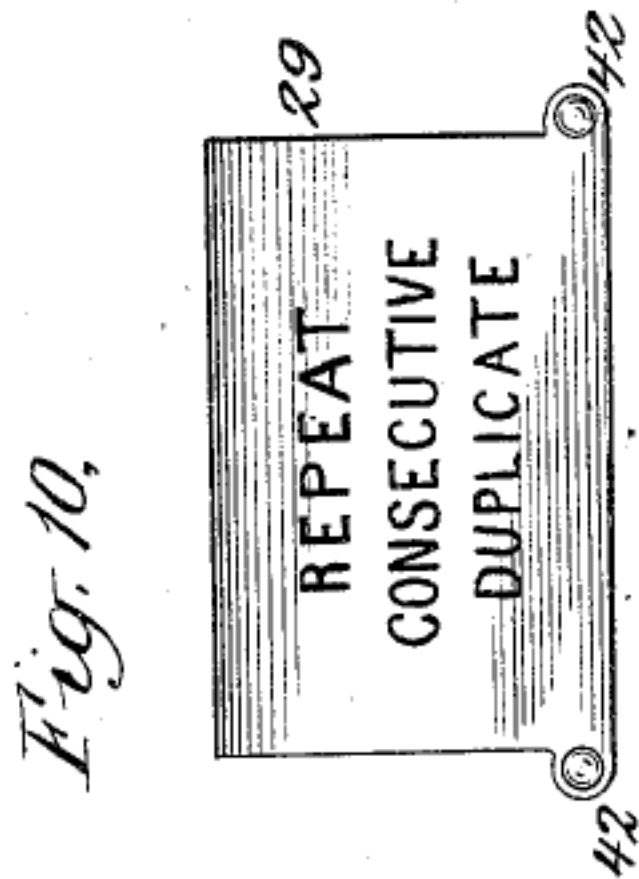
Edwin G. Bates

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E. G. BATES.
NUMBERING MACHINE.
APPLICATION FILED JULY 7, 1904.

3 SHEETS—SHEET 3.



WITNESSES:
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INVENTOR
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UNITED STATES PATENT OFFICE.

EDWIN G. BATES, OF NEW YORK, N. Y., ASSIGNOR TO THE BATES MACHINE COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

NUMBERING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 789,113, dated May 2, 1905.

Application filed July 7, 1904. Serial No. 215,612.

To all whom it may concern:

Be it known that I, EDWIN G. BATES, a citizen of the United States of America, and a resident of the city, county, and State of New York, have invented certain new and useful Improvements in Numbering-Machines, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

My invention relates to improvements in numbering-machines, and particularly to automatic hand numbering-machines.

My invention consists in certain improved mechanism for controlling the operation of the shifting movements given to the numbering-wheels upon each reciprocation of the machine for a printing operation, so that the machine may print numbers consecutively, in duplicate, or may repeat the same number indefinitely.

The objects of my invention are to simplify mechanism for this purpose and to render the operation thereof accurate and positive, to provide means whereby it may be instantly discernible as to how the machine is adjusted—that is to say, whether it is adjusted for “repeat,” “consecutive,” or “duplicate” printing—and to so design and construct the parts that they shall be simple and easy of manufacture and unlikely to get out of order.

My invention also consists in certain details of construction and novel combination of parts, as will hereinafter be more fully pointed out.

I will now proceed to describe a numbering-machine embodying my invention and will then point out the novel features in claims.

In the drawings, Figure 1 is a view in front elevation of a numbering-machine embodying my invention. Fig. 2 is a view in rear elevation of the same. Fig. 3 is a view in side elevation with the stationary body portion of the frame in transverse section. Fig. 4 is a similar view with the parts shown in their depressed or printing positions. Fig. 5 is a transverse sectional view, on an enlarged scale, showing the numbering-wheels and the actuating and controlling mechanism therefor.

Fig. 6 is a top view of the parts shown in Fig. 5, certain parts being broken away in order to show other parts beneath them. Fig. 7 is a detail view, on an enlarged scale, of one of the numbering-wheels employed. Figs. 8 and 9 are detail views illustrating the action of the controller in setting the machine for indefinite repeat. Fig. 10 is a face view of a curved plate employed in connection with the controller. Figs. 11 and 12 are face and edge views, respectively, of an idler-wheel employed.

The framework of the machine comprises an inverted-U-shaped body portion 1, a tubular stem 2, uprising therefrom, and a base-plate 3. The wheel-carrier comprises a wheel-carrying frame 4 and an operating-stem 5. The operating-stem passes through a perforation in the U-shaped body portion of the stationary frame and extends upward through the tubular extension 2. To the upper end of the stem 3 is secured an operating-handpiece 6. The said handpiece is counterbored at 7 to receive the upper end of the tubular extension 2, and a coiled spring 8, coiled around the stem 5, bears at one end against a shoulder formed in the stationary frame and at the other end against a shoulder formed at the base of the counterbore 7. The stem 2 and handpiece 6 completely inclose the spring and stem, forming a housing therefor. When the handpiece 6 is depressed to depress the wheel-carrier, the tubular extension 2 is received within the counterbore 7, within which the stem is allowed to slide freely.

The wheel-carrier 4 supports a wheel-shaft 9, the ends of which project beyond the frame of the wheel-carrier and are received within grooves 10, formed in the inner faces of the legs or standards of the body portion 1 of the stationary frame. This forms a guide for the wheel-carrier in its reciprocating movements and prevents the same from turning. The wheel-shaft in the present construction is secured in the frame against rotation, a set-screw 11 holding it in position. A plurality of numbering-wheels 12 are rotatably mounted upon the stationary wheel-shaft 9, each numbering-

wheel comprising a disk having printing-numbers on its periphery and ratchet-teeth by which the said wheels may be rotated, there being one ratchet-tooth for each number on the periphery and one of the series of teeth being a deep tooth, as is common in this connection. In addition to the six numbering-wheels here employed there is an idler-wheel 13 rotatably mounted upon the shaft 9, said idler-wheel having alternate deep and shallow ratchet-teeth. The numbering-wheels are each provided with stop-pawls 14, which engage their ratchet-teeth, and a similar stop-pawl 15 engages the ratchet-teeth of the idler-wheel 13. A comb-spring 16 presses on the pawls 14, causing them to bear with yielding pressure against the ratchet-teeth of the numbering-wheels. A pawl 15 is provided with a wire spring 17, tending to force it toward the idler-wheel 13, with the teeth of which it is adapted to engage.

The operating-pawls for the ratchet-wheels are carried by a rocking member 18, said rocking member pivoted to the stationary frame of the machine by means of pivots 19. This rocking member is operated by means of rocker arms or links 20, which are freely mounted upon the wheel-shaft 9 and are pivotally connected at their outer ends upon a bar or spindle 21, carried by the said rocking member. The operating-pawls 22 are hung upon this bar or spindle 21 and are spring-pressed toward the numbering-wheels by means of a coil-spring 23. The operating-pawls 22 comprise a bar having a plurality of teeth 24 of various lengths, which teeth are adapted to engage the ratchet-teeth of the numbering-wheels. The teeth 24 are progressively longer, so as to act as transfer devices at each complete revolution of any one wheel. This arrangement and construction is well known in this art, and any further detailed description of the operation thereof is unnecessary. In addition to the teeth 24 the pawl-bar also carries a tooth 25 for engagement with the idler-wheel 13. The length of the tooth 25 is such that when it is in engagement with any of the shallow teeth of the idler-wheel 13 the remainder of the pawl-teeth 24 will be held clear of engagement with any of the ratchet-teeth of any of the numbering-wheels. When, however, tooth 25 is received within one of the deep teeth of the idler-wheel 13, the pawl-teeth 24 will then be free to engage the ratchet-teeth of the numbering-wheels just as if the idler-wheel and the tooth 25 were not present.

Loosely mounted upon the wheel-shaft 9 is a controller 26, said controller comprising two arms 27 and 28, arranged upon the shaft at opposite ends of the numbering and idler wheels, and a curved plate 29. The arm 27 has three notches in its periphery, 30, 31, and 32, the surfaces between the notches being inclined, so as to form, in effect, cam-surfaces.

The notch 31 is a shallow notch, while the notches 30 and 32 are relatively deep. The arm 27 is arranged immediately between the idler-wheel 13 and the frame 4 of the wheel-carrier, and the pawl 15, which engages the idler-wheel 13, is provided with a pin or projection 33, arranged to engage the said notches. When the pin or projection 33 is received within either of the notches 30 or 32, the stop-pawl 15 will be free to engage the idler-wheel teeth; but when the arm is so turned as to cause the pin or projection 33 to be received within the notch 31 the pawl will have been forced out of engagement with the teeth of the idler-wheel 13 and will be held out of such engagement for so long a time as the pin or projection remains in the said notch. The other arm, 28, of the said controller has a cam projection 34, which in certain positions of the controller is adapted to engage or be engaged by the first pawl-tooth 24 of the pawl-bar 22. It will be noted that this first pawl-tooth 24 is wider than the others, so that it will not only engage the ratchet-teeth of the first numbering-wheel, but it will also overhang same, so as to be in a position to engage or be engaged by the cam projection 34, the arm 28 being located, as will be noticed, between the first numbering-wheel and the frame 4 of the wheel-carrier. In the present construction the position of the cam projection 34 is such as to engage or be engaged by the pawl when the controller is turned to cause the pin or projection 33 to engage the notch 32 in the arm 27. The cam projection 34 at this time acts as a blank to prevent the first pawl-tooth 24 from engaging the teeth of the first ratchet-wheel, and as the first pawl-tooth is the longest it consequently prevents all the teeth from engaging any of the ratchet-wheels, so that with the controller in this position reciprocation of the actuating-pawls will effect no movement whatsoever of the numbering-wheels. In any other position of the controller 26 the cam projection 34 will be moved so as to be out of the way of the first pawl-tooth 24, and the pawl-teeth will be permitted freely to engage their respective ratchet-wheels.

The wheel-carrier is provided with an overhanging curved shield 35, to which is fitted the curved plate 29. The shield 35 has a window 36 cut therein, through which a portion of the face of the curved plate 29 may be seen. The curved plate has the words "Repeat," "Consecutive," and "Duplicate" printed, engraved, or otherwise indicated thereon, and in the various positions of the controller the portions of the plate bearing these different words are arranged to be brought opposite the window in accordance with how the controller is set, so that the condition of the machine—i. e., whether the machine will print consecutively or in duplicate or will repeat—will be instantly discernible to the operator.

The curved plate 29 is provided with two projecting lugs or extensions, as shown, upon which are secured handpieces or knobs 42, by which the controller may be conveniently operated by hand. These knobs or finger-pieces project upwardly to the side of the shield 35, as clearly shown in Fig. 1, rendering them easily accessible. When the hand-piece 6 and wheel-carrier 4 are depressed for printing operation, the arms 20 will be partially rotated around the shaft 9 by reason of their pivotal engagement 21 with the rocking member 18, the rocking member 18 being rocked about its pivotal supports 19 at this time. The pawl-bar 22 being hung upon the spindle 21, supported between the rocking member and the arms 20, will be moved rearwardly with respect to the numbering-wheels to engage a fresh tooth thereon, and upon a return movement of the wheel-carrier such pawl-teeth as have engaged ratchet-teeth of the numbering-wheels will give a single step-by-step movement to such numbering-wheels to advance them a single unit. The pawls will so actuate the numbering-wheels after each printing operation when the controller is in its intermediate position, the notch 31 engaging the pin or projection 33 upon the stop-pawl 13 of the idler-wheel, leaving the idler-wheel entirely free. At this time the word "Consecutive" upon the curved plate 29 will show through the window 36 of the shield 25. During this time the pawl-tooth 25 upon the pawl-bar 22 will be received within one of the deep notches of the idler-wheel, and the stop-pawl being out of engagement therewith the idler-wheel will move backward and forward idly during the actuating movement of the pawl-bar, so that the pawl-teeth 24 will be free to engage their respective numbering-wheel ratchet-teeth. So long as the controller remains in this position the numbering-wheels will be rotated progressively step by step at each printing operation of the machine. When the controller is moved upward, so as to bring the word "Duplicate" thereon opposite the window 36, the pin or projection 33 on the idler stop-pawl 15 will be released from the notch 31 and will drop into one of the deep notches 30. When in this position, the stop-pawl 15 will be free to engage the teeth of the idler-wheel 13, so as to prevent any rearward or return movement thereof. With the parts in this position each reciprocation of the wheel-carrier for a printing operation will cause the pawl-tooth 25 upon the pawl-bar 22 to alternately engage a deep or shallow tooth of the said idler-wheel, the pawl-tooth 24 being held out of engagement with the numbering-wheel ratchet-teeth while the pawl-tooth 25 is engaging a shallow tooth of the idler-wheel 13 and the said pawl-tooth 24 being allowed to engage the numbering-wheel ratchet-teeth when the pawl-tooth 25 is engaging a deep

tooth of the idler-wheel 13. At this time the printing operations will be in duplicate—that is to say, the same number will be printed twice in succession before the actuating-pawls will be permitted to move the numbering-wheels to shift them forward one unit. In other words, while the actuating-pawls are reciprocated at each printing operation just as when the machine is set for consecutive printing they will be held in an inoperative position during alternate printing movements. When the controller is moved in the opposite direction to a position in which the word "Repeat" upon the shield 29 comes opposite the window 36 of the shield 35, the cam-surface 34 will prevent the first or longest pawl-tooth 24 from engaging ratchet-teeth of the No. 1 numbering-wheel, so that while the actuating-pawls will be continuously reciprocated with respect to the numbering-wheels they will be held out of operative engagement therewith and the wheels will remain in the positions at which they are set.

The ink-pad carrier 37 is carried by the rocking member 18, being pivotally supported thereto at 38, and links 39 are pivotally connected at their lower ends by pivot-pins 40 with the said ink-pad carrier and at their upper ends by pivot 41 to the wheel-carrier frame 4. When the wheel-carrier is depressed for a printing operation, the ink-pad carrier will be swung downward and outward out of the path of movement of the numbering-wheels, being returned to its normal position in engagement with the peripheries of the wheels upon the return movement of the wheel-carrier. The link engagement 39 will swing the ink-pad carrier downward and outward about the axis of its pivotal connection 38, while the rocking movement of the rocking member 18 will carry the same bodily still farther outward.

It will be obvious that the foregoing is but an embodiment of my invention and that the same is capable of many and varied modifications within the spirit and scope of my invention and, further, that certain parts may be employed in connection with other parts of different construction. Hence I do not desire to be limited only to the precise details of construction and combination of parts herein.

What I claim is—

1. In a machine of the character described, the combination with a plurality of printing-wheels, an idler-wheel, actuating-pawls for said printing-wheels and idler-wheel, and a stop-pawl for said idler-wheel, of a controller comprising two arms arranged upon opposite sides of the said printing and idler wheels, and a yoke connecting the two arms across the said wheels, one of the said arms arranged in one position of the controller to engage the said stop-pawl, and to prevent its engagement with said idler-wheel, and the other of said arms arranged in another posi-

tion of the controller to engage the actuating-pawls and prevent their engagement with said printing-wheels.

2. In a machine of the character described,
5 the combination with a plurality of printing-wheels, a stationary shaft upon which said printing-wheels and idler-wheel are mounted, actuating-pawls for said printing-wheels and idler-wheel, and a stop-pawl for said idler-wheel,
10 of a controller comprising two arms loosely mounted upon said shaft upon opposite sides of said printing and idler wheels, and a yoke connecting the two arms over the peripheries of said wheels, one of said arms
15 arranged to engage a projection on said stop-pawl and to be held impositively thereby in any of three positions in which it may be set, and in one of said positions to maintain said pawl out of engagement with the said idler-wheel, and the other of said arms arranged in
20 one position of the said controller to prevent the engagement of said actuating-pawls with the said printing-wheels.

3. In a machine of the character described,
25 the combination with a plurality of printing-wheels, an idler-wheel, actuating-pawls for said printing-wheels and idler-wheel, and a stop-pawl adapted to engage said idler-wheel, of a controller including a rotatably-mounted
30 member having three notches, each arranged to engage said idler-wheel stop-pawl in different positions of the controller, one of the said notches arranged in a raised portion of the member, whereby the stop-pawl, when engaged therein, will be held out of operative
35 engagement with the said idler-wheel.

4. In a machine of the character described, the combination with a plurality of printing-wheels, an idler-wheel, actuating-pawls for
40 said printing-wheels and idler-wheel, and a stop-pawl for said idler-wheel, of a controller comprising means in one position thereof for preventing the engagement of the said actuating-pawls with the said printing-wheels, and
45 in another position for preventing the engagement of said stop-pawl with said idler-wheel, said controller rotatably mounted about the axis of the said printing-wheels, and provided with a curved plate having thereon surface

marks indicating the various positions to which the machine may be set, such marks arranged in the movements of the controller to register with a relatively stationary portion of the device.

5. In a machine of the character described,
55 the combination with a wheel-carrier, a wheel-shaft supported thereby, a plurality of printing-wheels mounted upon said shaft, an idler-wheel, also mounted upon said shaft, actuating-pawls for said printing-wheels and idler-wheel, and a stop-pawl for said idler-wheel,
60 of a controller comprising arms mounted upon the wheel-shaft at opposite ends of the series of wheels carried thereby, and a curved plate connecting the two arms beyond the peripheries of the said wheels, one of said controller-arms adapted to engage the actuating-pawls and prevent their operative engagement with the printing-wheels, and the other of said arms
65 adapted to engage the stop-pawl for the idler-wheel, and prevent its operative engagement with the said idler-wheel, the said curved plate having surface marks thereon indicating the position to which the machine is set.

6. In a machine of the character described,
75 the combination with a wheel-carrier, a wheel-shaft supported thereby, a plurality of printing-wheels mounted on said shaft, an idler-wheel, also mounted on said shaft, actuating-pawls for said printing-wheels and idler-wheel, and a stop-pawl for said idler-wheel,
80 said wheel-carrier provided with a curved shield concentric with the axis of the said wheel-shaft, of a controller for said actuating means, said controller comprising a portion
85 rotatably mounted on said wheel-shaft, and a curved plate fitted to the curved shield of said wheel-carrier, said curved plate and shield having, the one surface marks thereon for indicating the various positions of the machine,
90 and the other a window for disclosing the said surface marks.

In witness whereof I have hereunto set my hand this 28th day of June, 1904.

EDWIN G. BATES.

Witnesses:

A. B. CARHART,
C. L. HALL.

NEXT ITEM

E. G. BATES.
NUMBERING MACHINE.
APPLICATION FILED JULY 7, 1904.

2 SHEETS—SHEET 1.

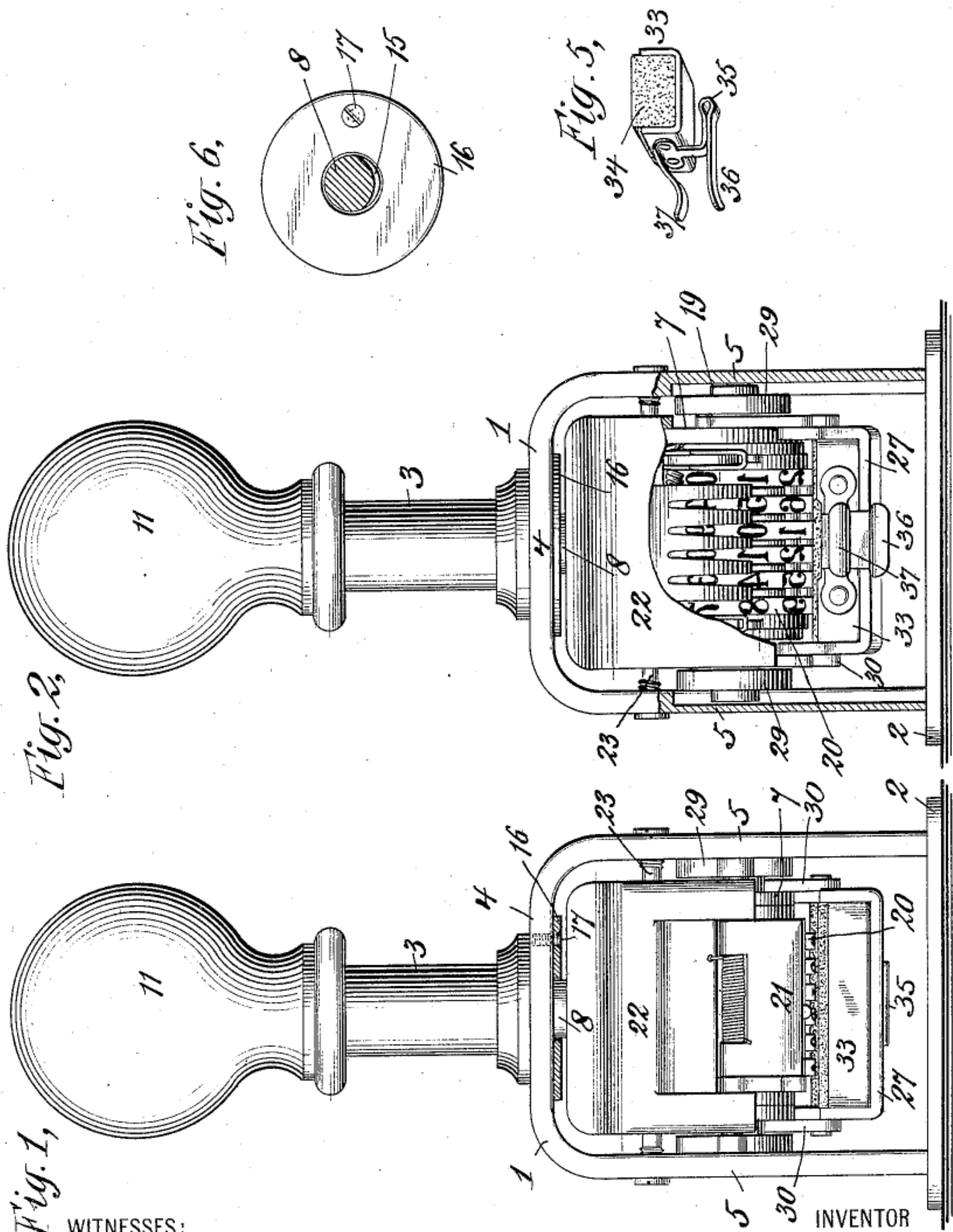


Fig. 1,

WITNESSES:

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Harry J. Cross

INVENTOR

Edwin G. Bates

BY

Chapin Raymond Mather
his ATTORNEYS

E. G. BATES.
NUMBERING MACHINE.
APPLICATION FILED JULY 7, 1904.

2 SHEETS—SHEET 2.

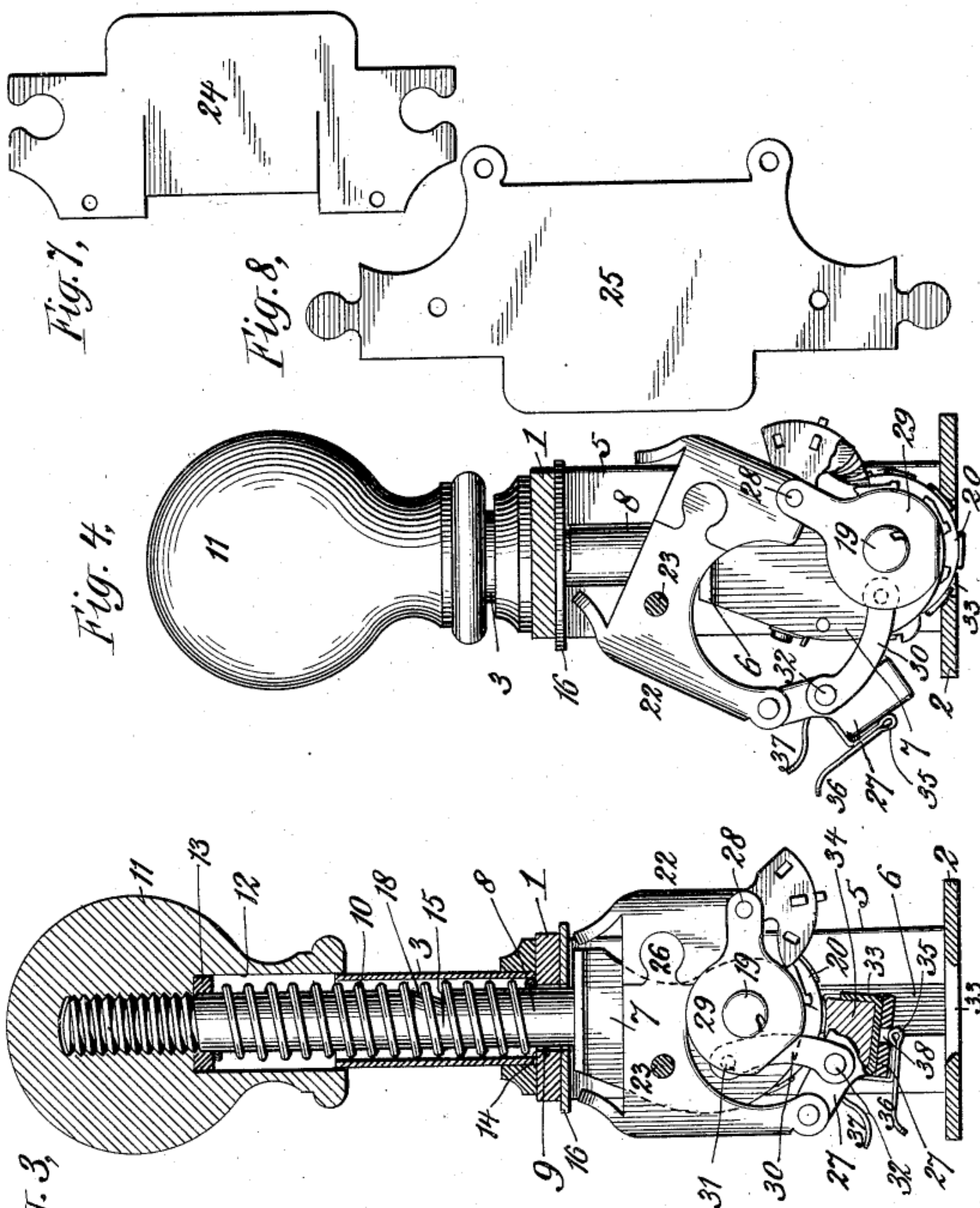


Fig. 3,

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Harry D. Goss.

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UNITED STATES PATENT OFFICE.

EDWIN G. BATES, OF NEW YORK, N. Y., ASSIGNOR TO THE BATES MACHINE COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

NUMBERING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 789,114, dated May 2, 1905.

Application filed July 7, 1904. Serial No. 215,613.

To all whom it may concern:

Be it known that I, EDWIN G. BATES, a citizen of the United States of America, and a resident of the city, county, and State of New York, have invented certain new and useful Improvements in Numbering-Machines, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

My invention relates to improvements in numbering-machines, and particularly to hand-operated numbering-machines.

My invention consists in certain improvements to the operating mechanism, the ink-pad mechanism, the construction of the ink-pad holder, and its means of attachment to the carrier and to certain details of construction and combination of parts, as will be hereinafter more fully set forth.

I will now proceed to describe a numbering-machine embodying my invention and will then point out the novel features in the claims.

In the drawings, Figure 1 is a view in front elevation of a numbering-machine embodying my invention. Fig. 2 is a rear view of the same. Fig. 3 is a view in side elevation of the operating parts of the machine and in central vertical section through the supporting-frame and handpiece. Fig. 4 is a view similar to Fig. 3, except that the parts are shown in their depressed or printing positions. Fig. 5 is a detail view in perspective of the ink-pad box. Fig. 6 is a detail view showing the locking-disk for the wheel-carrier. Figs. 7 and 8 are detail views of the blanks which when struck up and connected together form the rocking member which constitutes a support for the ink-pad carrier and a shield for the numbering-head when in its retracted position.

The stationary frame of the machine comprises an inverted-U-shaped body portion 1, a base-plate 2, and a tubular extension 3. The U-shaped body 1 has a horizontal portion 4 and two perpendicular legs or standards 5. The legs or standards 5 have grooves 6 on their inner faces to receive the ends of the wheel-carrying shaft to be presently ex-

plained. The horizontal portion 4 has a boss centrally disposed upon the upper side thereof, and the tubular extension 3 is fitted into the said boss.

The wheel-carrier comprises a frame 7 and a stem 8. The stem 8 passes up through a perforation 9 in the horizontal portion 4 of the frame and through the tubular extension 3. The outside diameter of the stem 8 is less than the inside diameter of the tubular extension 3, and a spring 10 is received and housed between the said stem and tubular extension, as clearly shown in Figs. 3 and 4 of the drawings. A handpiece 11 is secured to the end of the stem 8, conveniently by a screw-threaded engagement, and the handpiece is counterbored at 12 to receive the tubular extension and to permit free reciprocal movement of the handpiece and wheel-carrier. A washer 13 is preferably provided at the base of the counterbore, against which one end of the spring 10 is arranged to bear, the other end of the said spring bearing against the shoulder 14, formed in the frame. Pressure upon the top of the handpiece 11 will depress same against the tension of the spring 10, forcing the wheel-carrier down to the printing position in a manner well known to those skilled in the art to which this invention appertains. When the handpiece is so depressed, it telescopes the extension 3, said extension forming a shield or housing for the spring 10 and stem 8, but in no way impeding the free reciprocation of the parts. The stem 8 is notched at a point intermediate its length, so as to form an abutment 15. A disk 16, of a diameter somewhat greater than the width of the body portion 1 of the framework, is pivotally secured, by means of a screw 17, to the under side of the horizontal portion 4 of the said frame-body. The stem 8 passes freely and concentrically through the said disk, the pivot-screw 17 being set eccentrically thereof, as shown. When the wheel-carrier is in its depressed or printing position, the abutment 15 is about opposite the disk 16 and in position to be engaged thereby. If the disk then be pressed by hand on the side of the machine at which

is the abutment 15, the disk will be caused to engage with the said abutment and the wheel-carrier held and retained in its depressed or printing position. The disk may be disengaged from such engagement by hand-pressure upon the opposite side of the frame, the disk being arranged to project about equally on both sides of the portion 4. If desired, the notch in the stem 8, which is provided with an abrupt shoulder 15, as stated, may have its upper portion 18 tapered, so that an automatic release may be effected by pressing the handpiece down to a slightly greater extent, forcing the disk outward by the engagement of the cam-surface 18 of the disk, and so moving same from the path of the abutment 15. Then upon release of pressure on the handpiece the parts may be returned to their normal position by action of the spring 10.

The wheel-carrier supports a transverse wheel-shaft 19, suitably mounted in the frame 7 thereof. The ends of the shaft 19 protrude beyond the frame 7 of the wheel-carrier and enter the grooves 6 in the standards or legs of the body 1 of the main stationary frame of the machine. By this construction the wheel-carrier is guided and is prevented from turning. The wheel-shaft in this class of machine is usually held stationary in its support, and the numbering-wheels 20 are mounted thereon to turn freely under the influence of their actuating mechanism. This actuating mechanism comprises a plurality of pawls 21, carried by a portion of the device I here term a "rocking member." The rocking member, designated as a whole by the reference character 22, is pivotally supported upon the stationary frame by means of pivot-screws 23, which pass through the legs or standards 5 of the frame and engage the said rocking member. The rocking member comprises a substantially rectangular framework, which is composed structurally of rear and front portions suitably secured together. The blank for the front portion 24 is shown in Fig. 7, while the blank for the rear portion 25 is shown in Fig. 8. Both front and rear blanks have end pieces struck up rectangularly therefrom, the end pieces of the respective blanks arranged to dovetail, as at 26, in this instance the front portion 24 being arranged with cylindrical recesses in its end plates and the portion 25 arranged with cylindrical projections accurately fitted thereto. The two blanks struck up are those fitted together and may be subjected to another die operation, which will lock the parts together, the portions 24 and 25 then becoming one integral whole. As so constructed the rocking member 22 forms a guard or inclosure for the wheel-carrier and wheels when in its upper or retracted position and also forms a carrier for the operating-pawls 21 and a support for the ink-

pad carrier 27. The pawls 21 are hung upon a transverse bar or spindle 28, carried by the rocking member 22, the outer ends of which bar or spindle project beyond the said rocking member and form pivots for the outer ends of links or rocker-arms 29, loosely mounted at their other ends upon the wheel-shaft 19. Links 30 are pivotally connected at their opposite ends with the wheel-carrier at 31 and the ink-pad carrier at 32.

In operation depression of the handpiece 11 causes the wheel-carrier to descend until the wheels carried thereby are brought into printing position—i. e., with their peripheries in the slot 33 in the base-plate 2. In so descending the rocker arms or links 29 cause the rocking member 25 to be swung about its pivots 23, as shown in Fig. 4 of the drawings. This effects a double result. First, the portion of the rocking member 22 which carries the pawls 21 will be caused to describe an arc struck with the axis of the shaft 19 as a center. This will cause the pawls carried by the rocking member to move concentrically with respect to the wheels upon reciprocation of the wheel-carrier, whereby an angular reciprocation will be given to the pawls, causing them in their return movement to actuate the wheels in a manner well known, while the pivotal axis of the said pawls retains its proper relation to the pivotal axis of the wheels. I will not describe in detail herein the action of the operating-pawls upon the wheels, as such action is well known and forms in itself no part of the present invention. The rocking movement of the rocking member 22 will at the same time cause that portion thereof which pivotally supports the ink-pad carrier to move outward, as will be clearly seen by reference to Fig. 4 of the drawings, thus carrying the ink-pad carrier outward with it, and the relationship of the pivotal axes 31 and 32 of the links 30 is such as to swing the ink-pad carrier 27 about its own axis of support, so that it will be quickly and positively thrown clear of the descending type-wheels upon the first operation of the descending movement of the wheel-carrier.

The ink-pad carrier 27 forms a support for an ink-pad box 33, in which the ink-pad is arranged. The ink-pad box 33 carries a locking member 35 and two finger-pieces 36 and 37. The finger-piece 37 is secured to the box 33 and may, if desired, be a piece struck up integrally therefrom, while the finger-piece 36 is secured to the locking member 35. The other end of the locking member 35 is carried by the ink-box 33 and may be conveniently riveted thereto, as shown. If the finger-pieces 36 and 37 be pressed together, the locking member 35 will be caused to retreat from the base of the box 33. The length of the box 33 is just sufficient to pass between the arms of the pad-carrier 27, the base of the said ink-pad carrier

being received between the bottom of the box 33 and the locking member 35. The bottom of the ink-pad carrier is slotted, as 38, said slot arranged to receive the locking member 35. When, therefore, the ink-box is pushed into position in the ink-pad carrier, the locking member 35, entering the slot 38, will prevent the same from being accidentally displaced, while to remove the ink box and pad from the carrier it is only necessary to grasp same by the finger-pieces, slightly pressing them together, to freely withdraw the box. The pressing of the finger-pieces will lift the locking member out of the slot and permit such free withdrawal

It will be obvious that the foregoing is but one embodiment of my invention and that the same is capable of many and varied modifications within the spirit and scope of my invention, and, further, that certain parts may be employed in connection with other parts of different construction. Hence I do not desire to be limited only to the precise details of construction and combination of parts herein.

What I claim is—

1. In a machine of the class described, the combination with a stationary supporting-frame, of a reciprocating wheel-carrier, a rocking member pivoted to said supporting-frame, means for rocking said rocking member upon reciprocation of said carrier, an ink-pad carrier pivoted to said rocking member and carried thereby, and means for rocking said ink-pad carrier about its pivotal support, upon reciprocation of the said wheel-carrier, such rocking movement being supplemental to the movement of the said rocking member carrying it, and the means for rocking same independent of the means for rocking the rocking member.

2. In a machine of the class described, the combination with a stationary supporting-frame, of a reciprocating wheel-carrier, a rocking member pivoted to said supporting-frame, means for rocking said rocking member upon reciprocation of said carrier, an ink-pad carrier pivoted to said rocking member, and a link pivoted at opposite ends to the reciprocating wheel-carrier and the pivoted ink-pad carrier respectively.

3. In a machine of the class described, the combination with a stationary supporting-frame of a reciprocating wheel-carrier, a rocking member pivoted to said supporting-frame, an ink-pad carrier pivoted to said rocking member, and pivoted links connecting the reciprocating wheel-carrier with the rocking member and the ink-pad carrier respectively.

4. In a machine of the class described, the combination with a stationary supporting-frame, of a reciprocating wheel-carrier, a rocking member pivoted to said supporting-frame, said rocking member comprising front and rear plates constituting a guard or

protecting-shield for the wheels carried by the carrier, when in their normal return or rest positions.

5. In a machine of the class described, the combination with a stationary supporting-frame of a reciprocating wheel-carrier guided therein, a wheel-shaft mounted in said carrier, a rocking member pivoted to said supporting-frame, an ink-pad carrier pivoted to said rocking member, a link pivoted at one end to said reciprocating wheel-carrier about the axis of said wheel-shaft, and at the other end to the said rocking member, and another link pivoted at opposite ends to the reciprocating wheel-carrier and the pivoted ink-pad carrier respectively.

6. In a machine of the class described, the combination with a stationary frame comprising a horizontal portion and two perpendicular legs or standards provided with longitudinal grooves in their inner faces, of a reciprocating wheel-carrier mounted in said frame, a wheel-shaft in said carrier, said wheel-shaft having protruding ends arranged to be received and guided in said longitudinal grooves, a rocking member pivoted to said supporting-frame, an ink-pad carrier pivoted to said rocking member, an arm or link loosely mounted on said shaft and pivoted at its opposite end to said rocking member, and another link pivoted at opposite ends to the reciprocating wheel-carrier and the pivoted ink-pad carrier respectively.

7. In a machine of the class described, the combination with a supporting-frame, of a reciprocating wheel-carrier mounted in said frame and provided with a stem which passes therethrough, said stem having an abutment, and a disk having a concentric orifice through which said stem passes freely, said disk pivoted eccentrically upon said frame, and arranged to engage and disengage said abutment, and when in engagement therewith, to hold said wheel-carrier in its extended position.

8. In a machine of the class described, the combination with a supporting-frame comprising a horizontal body portion and two legs or standards dependent therefrom, of a reciprocating wheel-carrier mounted in said frame and provided with a stem which passes through a perforation in said horizontal body portion, said stem having an abutment, and a disk of a diameter greater than the width of said horizontal body portion, eccentrically pivoted to the same, and provided with a concentric orifice through which the said stem is arranged to reciprocate freely, said disk arranged to engage or disengage the abutment in said stem when opposite same by pressure against the periphery of the disk on one side or the other of said body portion, substantially as specified.

9. In a machine of the class described, the combination with a supporting-frame and a

reciprocating wheel-carrier, of an operating rocking member pivoted to said stationary frame, said rocking member comprising two struck-up blanks having interlocking portions by which the two parts are connected together, substantially as set forth.

10. In a machine of the class described, the combination with a supporting-frame and a reciprocating wheel-carrier, of an operating rocking member comprising a substantially rectangular box-like structure composed of two interlocked portions having dovetailed connections substantially as set forth, an ink-pad carrier pivotally carried by said operating member, and wheel-actuating pawls pivoted to said operating member.

11. In a machine of the class described, the combination with an ink-pad carrier, of an ink-pad box removably fitted thereto, said ink-pad box provided with a locking member rigidly secured thereto, but comprising a flexible shank with an enlarged

head, and said ink-pad carrier provided with a recess adapted to receive the head of said locking member, substantially as set forth.

12. In a machine of the class described, the combination with an ink-pad carrier comprising a base and two ends, said ends forming arms by which the ink-pad carrier is supported and operated, said base having a recess or slot, of an ink-pad box provided about midway of its length with a stationary finger-piece secured to the side thereof and having a projecting portion overhanging its base, and adapted to be received within the recess or slot in the base of said ink-pad carrier, substantially as set forth.

In witness whereof I have hereunto set my hand this 28th day of June, 1904.

EDWIN G. BATES

Witnesses:

A. B. CARHART,
C. L. HALL.

NEXT ITEM

N° 2325



A.D. 1905

(Under International Convention.)

*Date claimed for Patent under Patents Act, 1901, }
(being date of first Foreign Application (in } 6th Feb., 1904
United States),*

Date of Application (in the United Kingdom), 6th Feb., 1905

Accepted, 8th June, 1905

COMPLETE SPECIFICATION.

Improvements in and relating to Perforating, Embossing and Indenting Devices.

I, EDWIN GRANVILLE BATES, of 346 Broadway, New York City, County and State of New York, United States of America, President of The Bates Machine Company, of New Jersey, United States of America, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

My invention relates to improvements in perforating, embossing and indenting devices employed as printing press attachments for perforating, embossing or indenting the material operated upon during a printing operation.

A device constructed in accordance with my invention is arranged to be locked up in a form together with printing devices, such as type, stereotype, cuts, engravings and the like, the perforating, embossing or indenting dies, cutting edges or the like, of the device being arranged normally below the level of the type, so that in an inking operation they will not receive ink, nor will they be in a position to injure the inking rollers or other ink applying devices by contact therewith, but that the said embossing, indenting or cutting dies or cutters shall be raised to a level with, or preferably a distance beyond, the surfaces of the type while the type is engaging the paper or other material operated upon, the mechanism causing the said movement of the embossing, indenting or cutting dies or cutters being controlled by means of an operating head, normally projecting beyond the face of the type, but arranged outside of the zone of the inking rollers or the like so that it will not be affected thereby, but will be forced inward for such operating purpose by engagement with the platen during a printing operation.

My invention consists first in certain improvements in the means for moving the die or cutter bar backwards and forwards, comprising a longitudinally movable operating bar provided with cam faces engaging corresponding cam faces upon the die or cutter bar, the co-acting cam faces comprising forward and return cams, the return cam faces arranged to engage after the forward cam surfaces have reached the limit of their engagement, whereby the cutter bar may be positively moved outward, and returned, without the employment of springs or analogous impositive means; second, in an improved construction and arrangement of parts whereby a multiple of units may be employed, each unit arranged to be directly connected with an operating head or with another unit, so that a single operating head may be employed to operate a number of units connected

[Price 8d.]



Improvements in and relating to Perforating, Embossing and Indenting Devices.

together, or a single unit,—the parts being all interchangeable to the end that any desired length of embossing, indenting or cutting means may be employed; third, in a novel form of operating head employed, such operating head comprising a reciprocating rack bar, a gear engaging said rack bar, said gear provided with a projecting tooth arranged to engage a corresponding notch in the operating bar, and a spring for returning the rack bar to its normal position, said rack bar having a head arranged normally beyond type level, whereby depression of the said head against the resistance of the spring will rotate the gear and move the bar longitudinally for the purpose above set forth, the operating bar being arranged with oppositely disposed notches at either end, of complementary form, whereby they may interlock with each other, or may receive the operating head for the purposes set forth; and, fourth, in an improved construction and arrangement of stripping means in combination with a particular style of cutter bar employed, comprising a stripper bar arranged longitudinally and normally beyond the operating faces of the cutter bar, said stripper bar stems mounted in corresponding recesses in the cutter bar, springs between the cutter bar and the stripper bar, and means limiting the movement of the stripper bar.

The form of cutter bar which I employ comprises a plurality of arch-shaped cutters spaced apart in a longitudinal row, whereby a series of arch-shaped cuts are made in the material operated upon, to the end that the paper may be weakened along the line of cut, but no portions of the paper or other material removed. The advantage of this will be apparent when it is remembered that the device is to be employed during a printing operation. If the ordinary form of circular cutters were employed, the small portions of paper or other material removed thereby would distribute themselves all over the inking rollers, the type faces and so on, seriously interfering with good work. For this reason in the past cutters have been employed for making straight cuts or perforations in a longitudinal line with short spaces between them. In this way no portion of the paper is removed; but there are many objections to this form of perforating: First, the paper is much weakened along the line of perforation and is liable to break when it is not desired that it should do so; second, in tearing along these lines of perforations, a slight divergence in the line of strain is liable to cause the paper to tear out of the line of perforations, and, third, the appearance of the edges of the material when torn is not as good as where circular perforations are employed. A series of arch-shaped cuts will, however, weaken the paper to just about the same degree as will circular pieces removed therefrom, so that the paper will readily tear along such line of cuts, and the edges of the paper when torn will present an appearance closely resembling the appearance of paper perforated with circular cutters.

The main objects of my invention may be then summed up as follows: To effect a colorless cut, perforation, emboss or print during printing operation in a simple, efficient and entirely automatic manner; to make the various parts of the device or mechanism therefor interchangeable and readily extensible; to improve and simplify the operating mechanism; to effect a perforation of a form and shape which shall remove no portion of the paper during the perforating operation, leave the greatest strength to the paper, permit ready tearing of the paper in the line of perforations when desired, and give a good appearance to the paper when severed along the torn edge.

In order that my invention may be thoroughly understood, I will now describe an embodiment thereof with reference to the accompanying drawings illustrating same, in which

Figure 1 is a face view of a printing form with a device embodying my invention included therein.

Figure 2 is a view in side elevation of a device embodying my invention, removed from the form, and with one of the casing plates removed.

Figure 3 is a similar view with the parts in a different position.

Figure 4 is a top view of one of the units employed.

Improvements in and relating to Perforating, Embossing and Indenting Devices.

Figure 5 is a view in transverse section of the operating head, the plane of section being upon the line 5—5 of Figure 2.

Figure 6 is a face view of the operating device.

Figure 7 is a view in transverse section of one of the units, the plane of section being upon the line 7—7 of Figure 2.

Figure 8 is a similar cross-sectional view, the plane of section being taken upon the line 8—8 of Figure 3.

Figure 9 is a detailed view in longitudinal section through the cutter bar showing the stripper.

Figure 10 is a view of a piece of paper or similar material perforated according to my invention, and partially turned upon the line of perforations.

The cutter bar 1 is here shown with a plurality of semi-annular cutters 2, spaced the required distance apart and mounted therein in sockets communicating with a longitudinal groove 3, whereby access may be had thereto for the purpose of removal and displacement. The cutter bar is mounted in a suitable casing 5, having two side plates 6 and 7 and a base 8. Guide pins 9, passing through slots 10 in the cutter bar, serve as guides therefor and as means for limiting its outward movement. At its rear the cutter bar is provided with a number of projections 11, 11, 12, 12. The projections 12 have cam surfaces 13 and 14 for engagement with corresponding surfaces 15 and 16 in an operating bar or member 17. The operating bar has recesses 18 for receiving the projections 11 of the cutter bar, as well as the cam surfaces 15 and 16. Stops 19 limit the longitudinal movement of the operating bar 17. In operation, when the operating bar is moved from the position shown in Figure 2 to the position shown in Figure 3, the cam surfaces 15 engaging the surfaces 13, force the bar outward a limited distance, and in its further movement will pass on so as to form a rigid backing for the cutter bar, as is clearly shown in Figure 3. Upon a return movement the cam surfaces 16, being of greater extent than the cam surfaces 15, will engage the co-acting cam surfaces 14, and will return the bar to its former position. This construction obviates the employment of springs for returning the bar, or initiating the return movement thereof, as has been common heretofore.

Each device comprising a cutter bar 1 and suitable cutters or dies carried thereby, a casing 5 and an operating bar 17, is herein designated a unit, and each unit is arranged to be connected at either end to a corresponding unit and at the other end to another corresponding unit or to an operating head. For the purposes of connection, the operating bar is arranged to overhang as at 20, such overhanging end provided with a notch 21 and a tooth 22. The opposite end of the operating bar terminates inside the casing at a distance from the end corresponding to the overhanging portion 20, and is provided with a notch 23 and a tooth 24 arranged to engage a tooth and notch 22, 21 of the operating bar of the corresponding unit.

The operating head comprises a casing 25, a head 26, provided with stems 27 suitably mounted in corresponding orifices 28 in the casing 25, pins 29 for limiting the movement of the head, a spring 30 for forcing the head outward, a rack 31 secured to the head, and an operating gear or sector 32 rotatably mounted upon a stud 33. The sector 32 has a tooth or projection 34, arranged to be received within the notch 21 of the operating bar of any of the units, the overhanging end 20 of such operating bar being received within a slot or opening 35 in the said casing. Said casing is preferably provided with a removable portion 36 to permit access to the operating sector and ready assemblage of the parts.

In operation, as many of the units as are desired to make up the length of line to be perforated are connected together, and an operating head is connected to the end of the first unit. The operating head and units so connected are locked up together with type, &c. in a printers' form, and the device is then ready for operation.

Improvements in and relating to Perforating, Embossing and Indenting Devices.

The casings 5 of the die or cutter units, and the casing 25 of the operating head, are arranged to engage and interlock with each other, the end of the casings 5 being accurately fitted to a portion of the slot or opening 35, and a pin 37 arranged to be received within an orifice 38 in the casing 5.

The stripper herein comprises a bar 40 arranged longitudinally alongside of the cutters 2 and normally projecting beyond the cutting edges thereof. This bar has guiding stems 41 mounted in recesses 42 in the said bar, stop pins 43 being provided for limiting the movements thereof. Springs 44 tend to force the stripper outward, but the stop pins limit the movement thereof.

In Figure 7 the strippers are shown as in their normal out of operation position, with the cutter bar in its rearward position. In Figure 8 the cutter bar is shown as forced outward, while the stripper is in its rearmost position, into which position it is forced by contact with the paper or other material being perforated. Upon the return movement of the cutter bar the springs 44 force the stripper outward again and strip the paper from the cutters.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:

1. A device of the character described, provided with a longitudinally movable operating bar and a transversely movable die or cutter bar, the two said bars having cooperating forward and return cam faces of the character described, operating substantially in the manner and for the purpose set forth.

2. In a device of the character described, the combination of a plurality of units, each comprising a die or cutter bar and an operating member, the operating member of each unit arranged, constructed and adapted for connection at one end with the corresponding operating member of another unit, and at the other end with a corresponding operating member of still another unit, or with the operating mechanism of an operating head, substantially as specified and for the purpose set forth.

3. In a device of the character described, the combination with the longitudinally movable operating bar, of the operating mechanism therefor, comprising a spring returned reciprocating rack bar having an operating head, and a gear engaged by said rack bar, said gear having a tooth for engaging the longitudinally movable operating bar, substantially as described and for the purpose specified.

4. In a device of the character described, the combination with the cutter bar, including a plurality of cutters arranged in a longitudinal row, of a spring pressed stripper bar arranged longitudinally at one side of said cutters, said stripper bar having guiding stems mounted in suitable recesses in the cutter bar, whereby said stripper is carried by said bar but is movable with respect thereto.

5. In printing press perforating attachments of the character claimed above, a plurality of arch-shaped cutters spaced apart for effecting a series of cuts with intervening unsevered portions or connections, substantially as and for the purpose specified.

6. A printing press perforating, embossing or indenting device constructed, arranged and adapted to operate substantially as described and shown with reference to the accompanying drawings as and for the purpose set forth.

Dated this 23rd day of January, 1905.

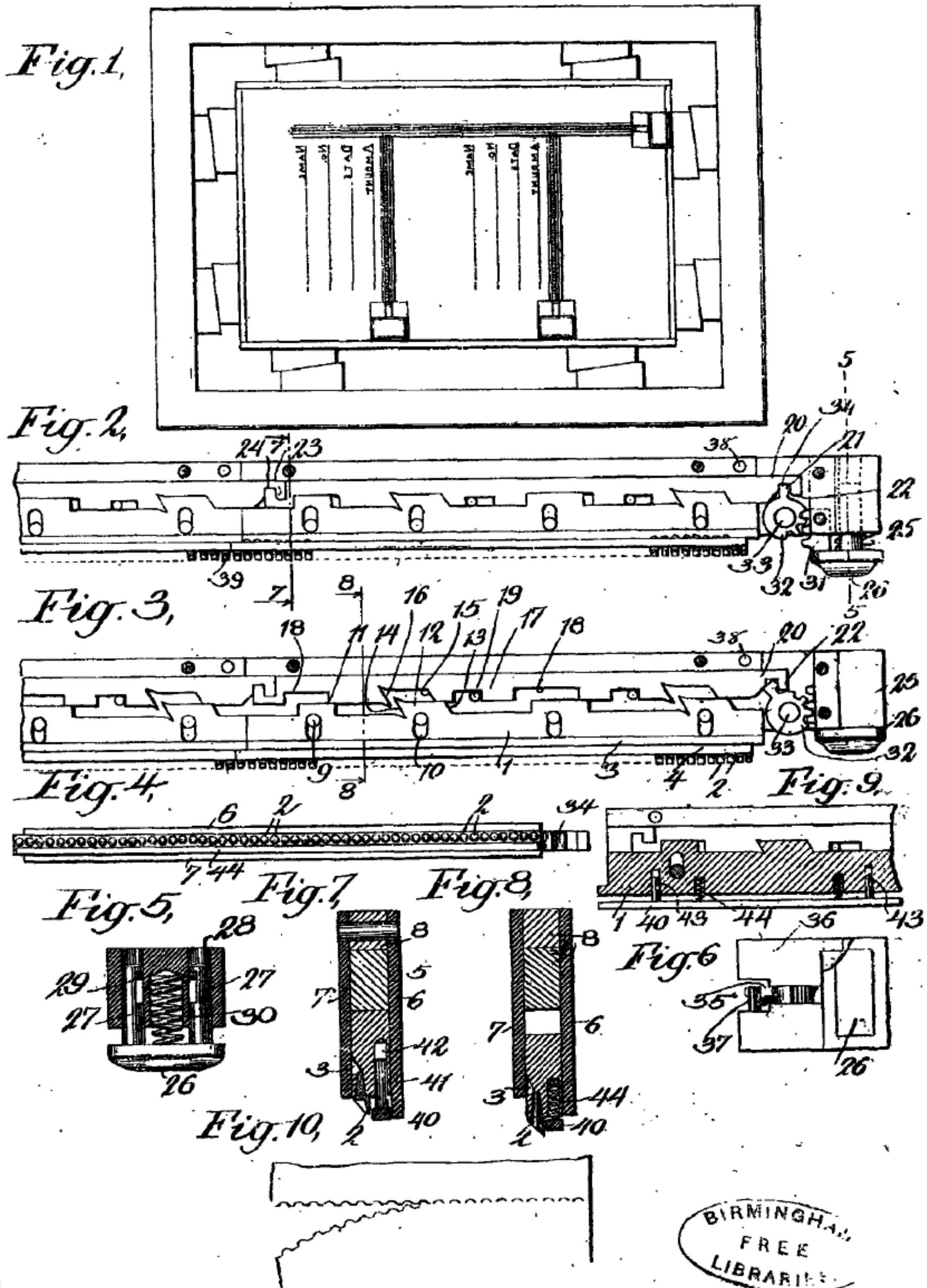
EDWIN GRANVILLE BATES,

Haseltine, Lake & Co.,

7 & 8 Southampton Buildings, London, W.C.

Agents for the Applicant.

[This Drawing is a reproduction of the Original on a reduced scale.]



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NEXT ITEM



Date of Application, 28th Feb., 1905—Accepted, 29th June, 1905

COMPLETE SPECIFICATION.

**Improvements in the Numbering-mechanism of Hand-operated
Numbering Machines.**

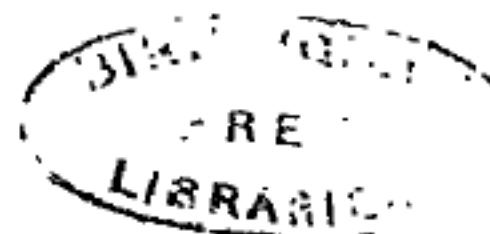
I, EDWIN GRANVILLE BATES, of 346 Broadway, New York City, County and State of New York, United States of America, President of The Bates Machine Company of New Jersey, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

My invention relates to hand-operated numbering machines, in which a frame or carrier supporting independently revoluble type or numbering wheels is reciprocated to effect a printing operation, the inking mechanism therefor being automatically operated by the reciprocating carrier at each printing operation of the machine. This general class of machines includes machines in which the numbering wheels are turned by hand, or by means of a hand-lever, and also machines in which mechanism is provided by which the numbering wheels may be automatically operated by the reciprocation of the carrier during the printing operation. In this latter class of machines means have been provided whereby the numbering wheels may be given a step by step movement at each printing operation, the machine thus being arranged to print consecutively,—whereby the numbering wheels may be given a step by step movement at every alternate printing operation, under which conditions the machine is said to duplicate, and whereby the numbering wheels may remain unaffected by any operating mechanism, so that there will be no step by step movement, and in this condition the machine is said to "repeat".

My present invention consists in certain improvements in the means for automatically operating the printing wheels, and in controlling and adjusting mechanism for causing the machine to operate to print consecutively, in duplicate, or to repeat.

According to my invention, I provide an idler wheel having alternate deep and shallow teeth, which I employ in connection with the printing and ratchet wheels, and the actuating pawls therefor, together with a stop pawl for said idler wheel, and a controller comprising two arms arranged upon opposite sides of the said printing and idler wheels, and a yoke connecting the two arms across the said wheels, one of the said arms arranged in one position of the controller to engage the idler wheel stop pawl so as to prevent its engagement therewith, and the other of said arms arranged in another position of the controller to engage the actuating pawls and prevent their engagement with the printing wheels. When the stop pawl is held out of engagement with the idler wheel, the actuating pawls, being provided with suitable mechanism for such a purpose, will coact with the printing wheels to give same a step by step movement at each reciprocation of the wheel carrier. When, however, the stop pawl is in engagement with the idler wheel, a tooth of the actuating pawls will engage the alternate deep and shallow teeth of the idler wheel to lift the actuating pawls out of engagement with the printing wheels at the alternate reciprocations of the carrier, so that the step by step movement will be imparted only upon alternate printing operations. When the actuating

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Impts. in the Numbering-mechanism of Hand-operated Numbering Machines.

pawls are lifted altogether clear of the printing wheels, it will, of course, follow that the printing wheels will not be operated, and the machine will repeat the same number at each printing operation. The yoke portion of the controller preferably comprises a curved plate, having printed thereon the words "repeat", "consecutive", and "duplicate". This portion is arranged at the rear of a shield or guard having a window or opening therein, so that the word corresponding with the condition of the machine will appear opposite the window, whereby the adjustment of the machine may be immediately comprehended at a glance. 5

I preferably mount the operating pawls upon the rocking frame, and in a line thereon with the axis of the connection between the rocking frame and the link, which, at its other end, is mounted pivotally upon the wheel shaft, and hence upon the axis of rotation of the wheels. 10

In order that my invention may be clearly understood, I will describe certain embodiments thereof in detail, referring to the accompanying drawings illustrating same, in which 15

Figure 1 is a view in side elevation of the operating parts of a numbering machine, the supporting frame and hand piece being shown in central vertical section.

Figure 2 is a view similar to Figure 1, except that the parts are shown in their depressed or printing positions, and the hand piece is shown in side elevation. 20

Figure 3 is a transverse sectional view on an enlarged scale showing the numbering wheels and the actuating and controlling mechanism therefor.

Figure 4 is a top view of the parts shown in Figure 3, certain parts being broken away in order to show other parts beneath them. 25

Figure 5 is a detail view on an enlarged scale of one of the numbering wheels employed.

Figure 6 is a detail view illustrating the action of the controller in adjusting the machine for "repeat". 30

Figure 7 is a face view of a curved plate or yoke comprising a portion of the controller.

Figures 8 and 9 are side and edge views respectively of the idler wheel.

A machine of this general type comprises an arch or inverted U-shaped body portion 1, a tubular stem 2 uprising therefrom, and a base plate 3. The wheel carrier comprises a wheel carrying frame 4 and an operating stem 5. The operating stem passes through a perforation in the U-shaped body portion of the stationary frame, extending upward through the tubular extension 2. To the upper end of the stem 5 is secured an operating hand piece 6. The said hand piece is counterbored at 7 to receive the upper end of the tubular extension 2, and a coil spring 8 coiled around the stem 5 bears at one end against a shoulder formed in the stationary frame, and at the other end against the shoulder formed at the base of the counterbore 7. 40

The wheel carrier 4 supports a wheel shaft 9, the ends of which project beyond the frame of the wheel carrier, and are received within grooves 10 formed in the inner faces of the legs or standards of the body portion 1 of the stationary frame. This forms a guide for the wheel carrier in its reciprocating movements, and prevents the same from turning. The wheel shaft, in the present construction, is secured in the frame against rotation, a set screw 11 holding it in position. A plurality of numbering wheels 12 are rotatably mounted upon the stationary wheel shaft 9, each numbering wheel comprising a disk having printing numbers on its periphery, and ratchet teeth by which the said wheels may be rotated, there being one ratchet tooth for each number on the periphery, and one of the series of teeth being a deep tooth, as is common in this connection. 50

In addition to the six numbering wheels here employed, there is an idler wheel 13, rotatably mounted upon the shaft 9, said idler wheel having alter- 55

Impts. in the Numbering-mechanism of Hand-operated Numbering Machines.

nate deep and shallow ratchet teeth. The numbering wheels are each provided with stop pawls 14, which engage their ratchet teeth, and a similar stop pawl 15 engages the ratchet teeth of the idler wheel 13. A comb spring 16 presses on the pawls 14, causing them to bear with yielding pressure against ~~the ratchet teeth of the numbering wheels.~~ A pawl 15 is provided with a wire spring 17, tending to force it toward the idler wheel 13, with the teeth of which it is adapted to engage.

The operating pawls for the ratchet wheels are carried by a rocking member 18, said rocking member pivoted to the stationary frame of the machine by means of pivots 19. This rocking member is operated by means of rocker arms or links 20, which are freely mounted upon the wheel shaft 9, and are pivotally connected at their outer ends upon a bar or spindle 21 carried by the said rocking member. The operating pawls 22 are hung upon this bar or spindle 21, and are spring pressed toward the numbering wheels by means of a coil spring 23. The operating pawls 22 comprise a bar having a plurality of teeth 24 of various lengths, which teeth are adapted to engage the ratchet teeth of the numbering wheels. The teeth 24 are progressively longer, so as to act as transfer devices at each complete revolution of any one wheel. This arrangement and construction is well known in this art, and any further detailed description of the operation thereof is unnecessary. In addition to the teeth 24, the pawl bar also carries a tooth 25 for engagement with the idler wheel 13. The length of the tooth 25 is such that when it is in engagement with any of the shallow teeth of the idler wheel 13, the remainder of the pawl teeth 24 will be held clear of engagement with any of the ratchet teeth of any of the numbering wheels. When, however, tooth 25 is received within one of the deep teeth of the idler wheel 13, the pawl teeth 24 will then be free to engage the ratchet teeth of the numbering wheels, just as if the idler wheel and the tooth 25 were not present.

Loosely mounted upon the wheel shaft 9 is a controller 26, said controller comprising two arms 27 and 28, arranged upon the shaft at opposite ends of the numbering and idler wheels, and a curved plate 29. The arm 27 has three notches in its periphery, 30, 31 and 32, the surfaces between the notches being inclined so as to form in effect cam surfaces. The notch 31 is a shallow notch, while the notches 30 and 32 are relatively deep. The arm 27 is arranged immediately between the idler wheel 13 and the frame 4 of the wheel carrier, and the pawl 15, which engages the idler wheel 13, is provided with a pin or projection 33 arranged to engage the said notches. When the pin or projection 33 is received within either of the notches 30 or 32, the stop pawl 15 will be free to engage the idler wheel teeth, but when the arm is so turned as to cause the pin or projection 33 to be received within the notch 31, the pawl will have been forced out of engagement with the teeth of the idler wheel 13, and will be held out of such engagement for so long a time as the pin or projection remains in the said notch.

The other arm 28 of the said controller has a cam projection 34, which in certain positions of the controller is adapted to engage, or be engaged by, the first pawl tooth 24 of the pawl bar 22. It will be noted that this first pawl tooth 24 is wider than the others, so that it will not only engage the ratchet teeth of the first numbering wheel, but it will also overhang same, so as to be in a position to engage, or be engaged by, the cam projection 34, the arm 28 being located, as will be noticed, between the first numbering wheel and the frame 4 of the wheel carrier. In the present construction the position of the cam projection 34 is such as to engage, or be engaged by, the pawl when the controller is turned to cause the pin or projection 33 to engage the notch 32 in the arm 27. The cam projection 34, at this time, acts as a blank, to prevent the first pawl tooth 24 from engaging the teeth of the first ratchet wheel, and as the first pawl tooth is the longest, it consequently prevents all the teeth from engaging any of the ratchet wheels, so that with the controller in this

Impts. in the Numbering-mechanism of Hand-operated Numbering Machines.

position, reciprocation of the actuating pawls will effect no movement whatsoever of the numbering wheels. In any other position of the controller 26, the cam projection 34 will be moved so as to be out of the way of the first pawl tooth 24, and the pawl teeth will be permitted freely to engage their respective ratchet wheels.

The wheel carrier is provided with an overhanging curved shield 35, to which is fitted the curved plate 29. The shield 35 has a window 36 cut therein, through which a portion of the face of the curved plate 29 may be seen. The curved plate has the words "repeat", "consecutive" and "duplicate" printed, engraved or otherwise indicated thereon, and in the various positions of the controller, the portions of the plate bearing these different words are arranged to be brought opposite the window, in accordance with how the controller is set, so that the condition of the machine, *i.e.*, whether the machine will print consecutively or in duplicate, or will repeat, will be instantly discernible to the operator. The curved plate 29 is provided with two projecting lugs or extensions as shown, upon which are secured hand pieces or knobs 42, by which the controller may be conveniently operated by hand. These knobs or finger pieces project upwardly to the side of the shield 35, as clearly shown in Figure 1, rendering them easily accessible. When the hand piece 6 and wheel carrier 4 are depressed for printing operation, the arms 20 will be partially rotated around the shaft 9, by reason of their pivotal engagement 21 with the rocking member 18, the rocking member 18 being rocked about its pivotal supports 19 at this time. The pawl bar 22, being hung upon the spindle 21, supported between the rocking member and the arms 20, will be moved rearwardly with respect to the numbering wheels to engage a fresh tooth thereon, and upon a return movement of the wheel carrier, such pawl teeth as have engaged ratchet teeth of the numbering wheels, will give a single step by step movement to such numbering wheels to advance them a single unit. The pawls will so actuate the numbering wheels after each printing operation when the controller is in its intermediate position, the notch 31 engaging the pin or projection 33 upon the stop pawl 13 of the idler wheel, leaving the idler wheel entirely free. At this time the word "consecutive" upon the curved plate 29 will show through the window 36 of the shield 35. During this time the pawl tooth 25 upon the pawl bar 22 will be received within one of the deep notches of the idler wheel, and the stop pawl being out of engagement therewith, the idler wheel will move backwards and forwards idly during the actuating movement of the pawl bar, so that the pawl teeth 24 will be free to engage their respective numbering wheel ratchet teeth. So long as the controller remains in this position, the numbering wheels will be rotated progressively step by step at each printing operation of the machine. When the controller is moved upward, so as to bring the word "duplicate" thereon opposite the window 36, the pin or projection 33 on the idler stop pawl 15 will be released from the notch 31, and will drop into one of the deep notches 30. When in this position the stop pawl 15 will be free to engage the teeth of the idler wheel 13, so as to prevent any rearward or return movement thereof. With the parts in this position, each reciprocation of the wheel carrier for a printing operation will cause the pawl tooth 25 upon the pawl bar 22 to alternately engage a deep or shallow tooth of the said idler wheel, the pawl tooth 24 being held out of engagement with the numbering wheel ratchet teeth while the pawl tooth 25 is engaging a shallow tooth of the idler wheel 13, and the said pawl tooth 24 being allowed to engage the numbering wheel ratchet teeth when the pawl tooth 25 is engaging a deep tooth of the idler wheel 13. At this time the printing operations will be in duplicate, that is to say, the same number will be printed twice in succession, before the actuating pawls will be permitted to move the numbering wheels to shift them forward one unit. In other words, while the actuating pawls are reciprocated at each printing

Impts. in the Numbering-mechanism of Hand-operated Numbering Machines.

operation, just as when the machine is set for consecutive printing, they will be held in an inoperative position during alternate printing movements. When the controller is moved in the opposite direction to a position in which the word "repeat", upon the shield 29, comes opposite the window 36 of the shield 35, the cam surface 34 will prevent the first or longest pawl tooth 24 from engaging ratchet teeth of the number one numbering wheel, so that while the actuating pawls will be continuously reciprocated with respect to the numbering wheels, they will be held out of operative engagement therewith, and the wheels will remain in the positions at which they are set.

10 Having now particularly described and ascertained the nature of my said invention, and in what manner the same is to be performed, I declare that what I claim is:

1. A hand numbering machine provided with a controller comprising two arms arranged upon opposite sides of the printing wheels and idler wheel, and a yoke connecting the two across the said wheels, one of the arms arranged to engage a stop pawl for the idler wheel and the other of the arms to engage actuating pawls, substantially as and for the purpose set forth.

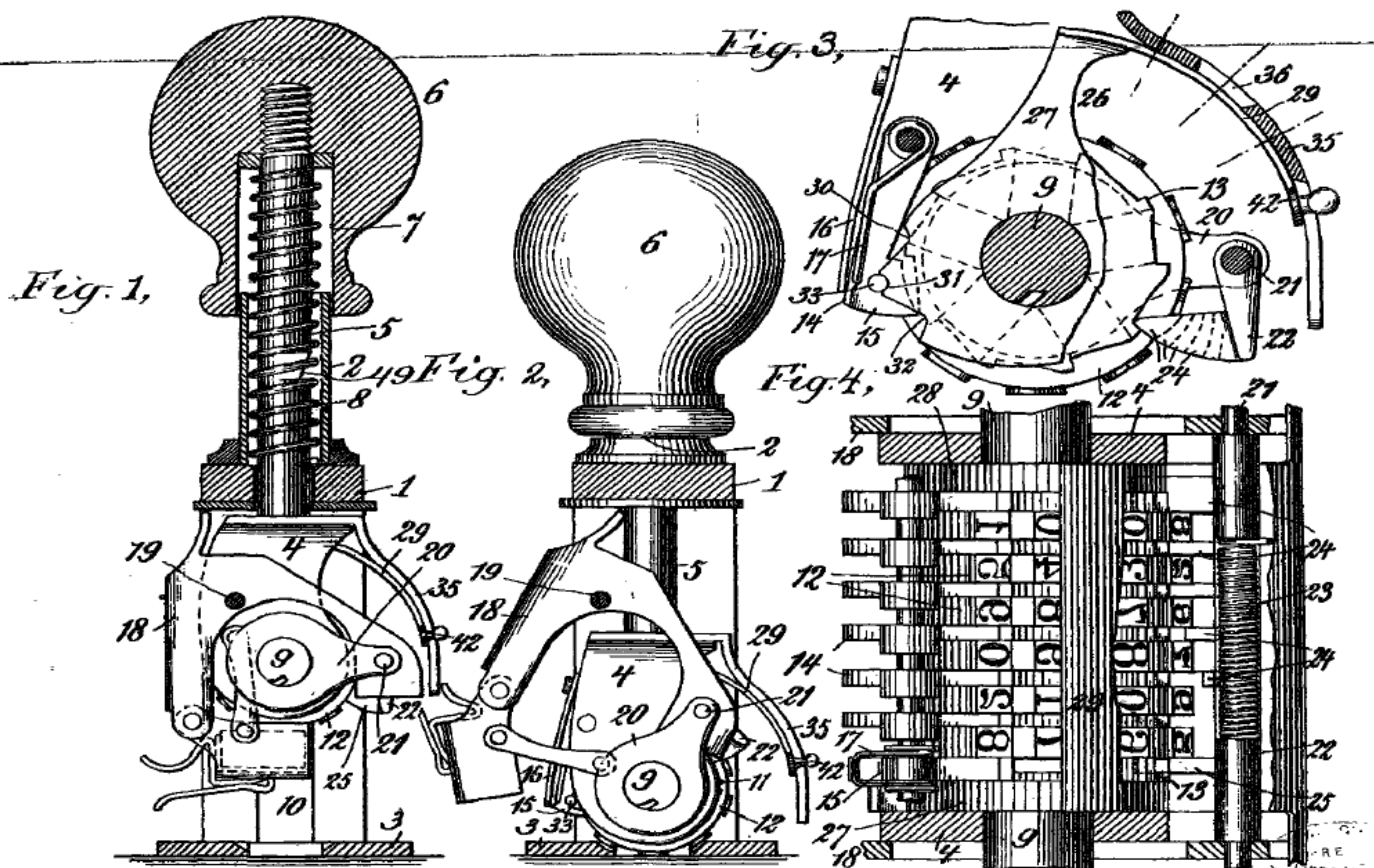
2. A hand numbering machine provided with a controller of the character described, the yoke of which comprises a curved plate concentric with the numbering wheels, and provided with surface marks indicating the various positions of the machine, the wheel carrier provided with a curved plate fitted to the said curved yoke and having an opening or window through which the surface marks may be read, substantially as specified and for the purpose set forth.

3. Numbering-mechanism for hand numbering machines constructed, arranged and adapted to operate substantially as described and shown, with reference to the accompanying drawings, as and for the purpose specified.

Dated this 28th day of February 1905

HASELTINE, LAKE & Co.,
7 & 8 Southampton Buildings, London, W.C.
Agents for the Applicant.

[This Drawing is a full-size reproduction of the Original.]



[This Drawing is a full-size reproduction of the Original.]

Fig. 1,

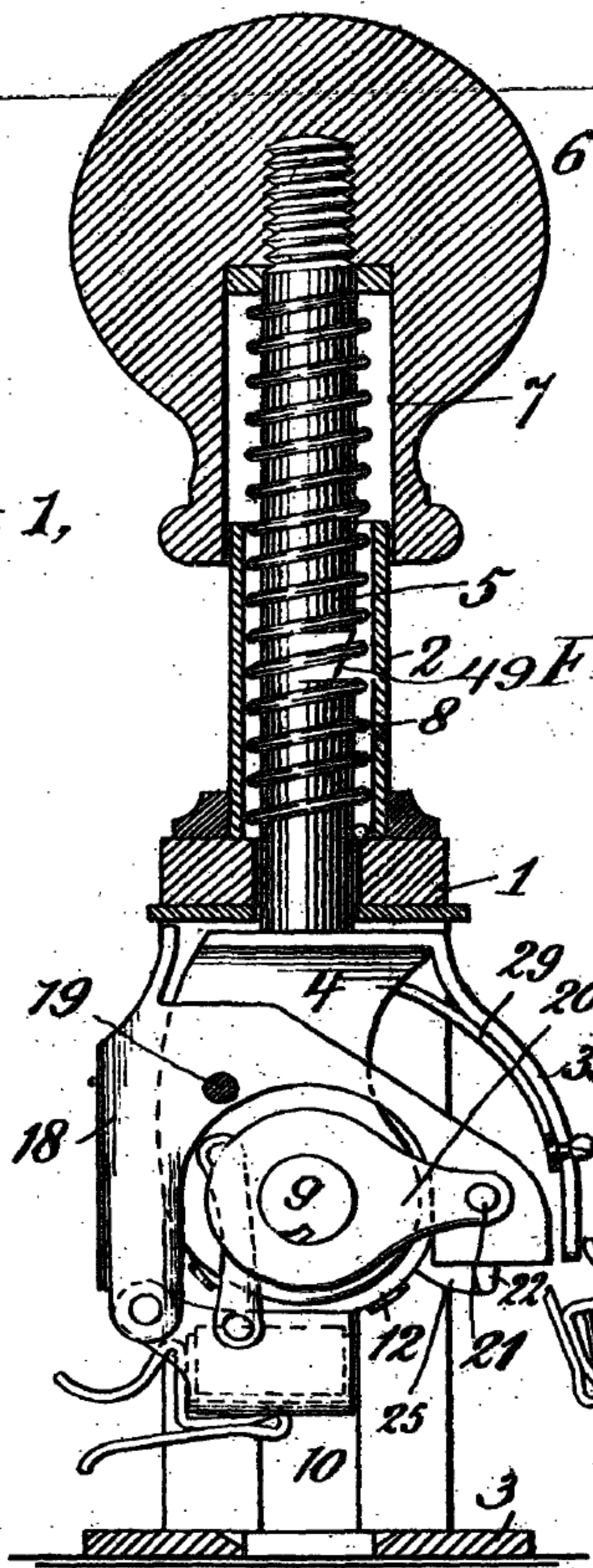


Fig. 2,

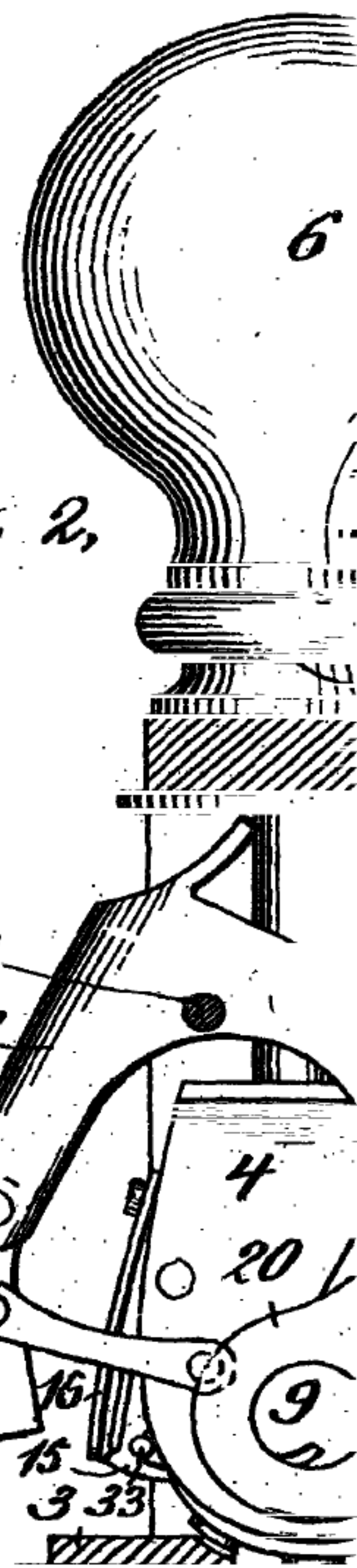


Fig. 3,

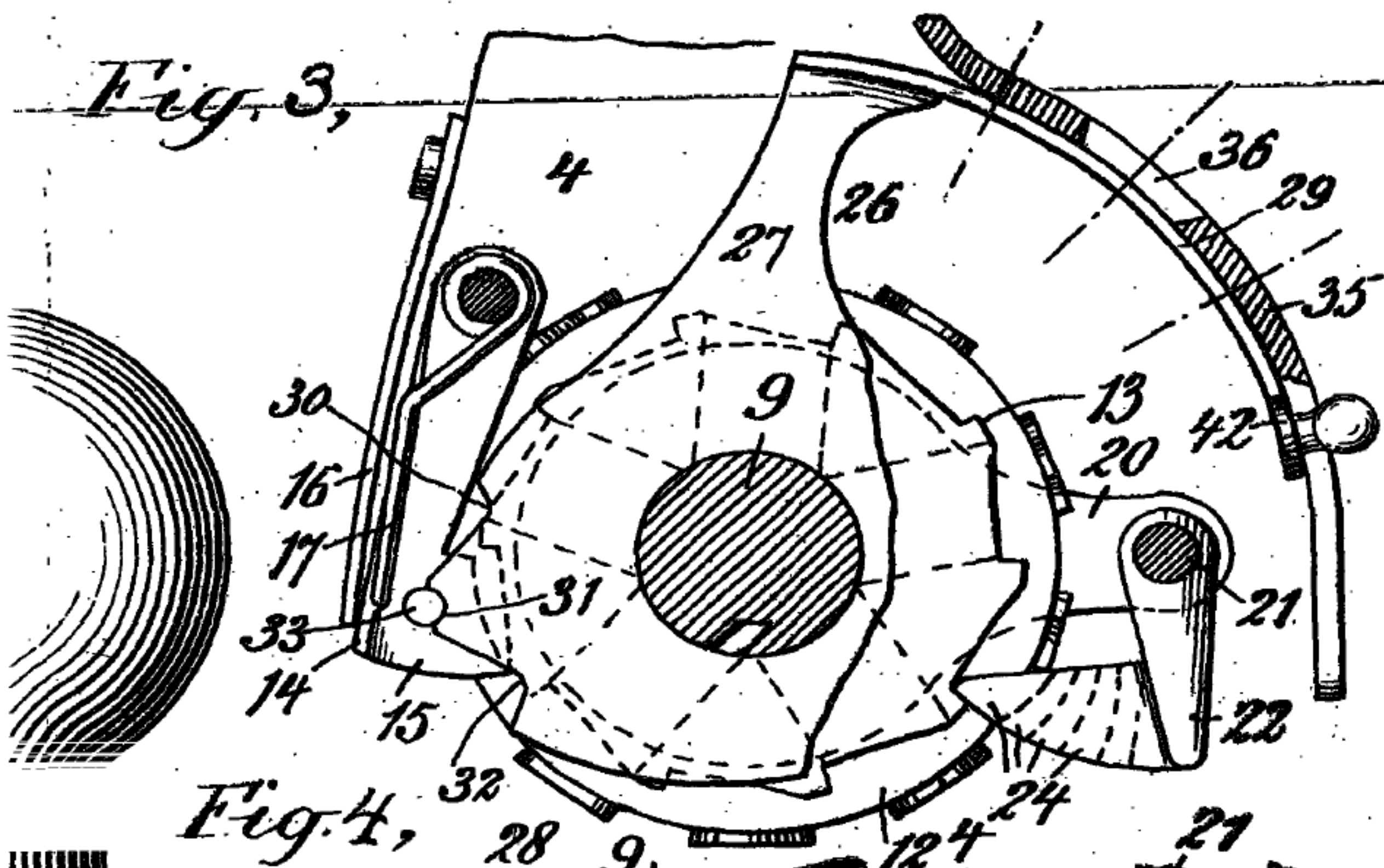
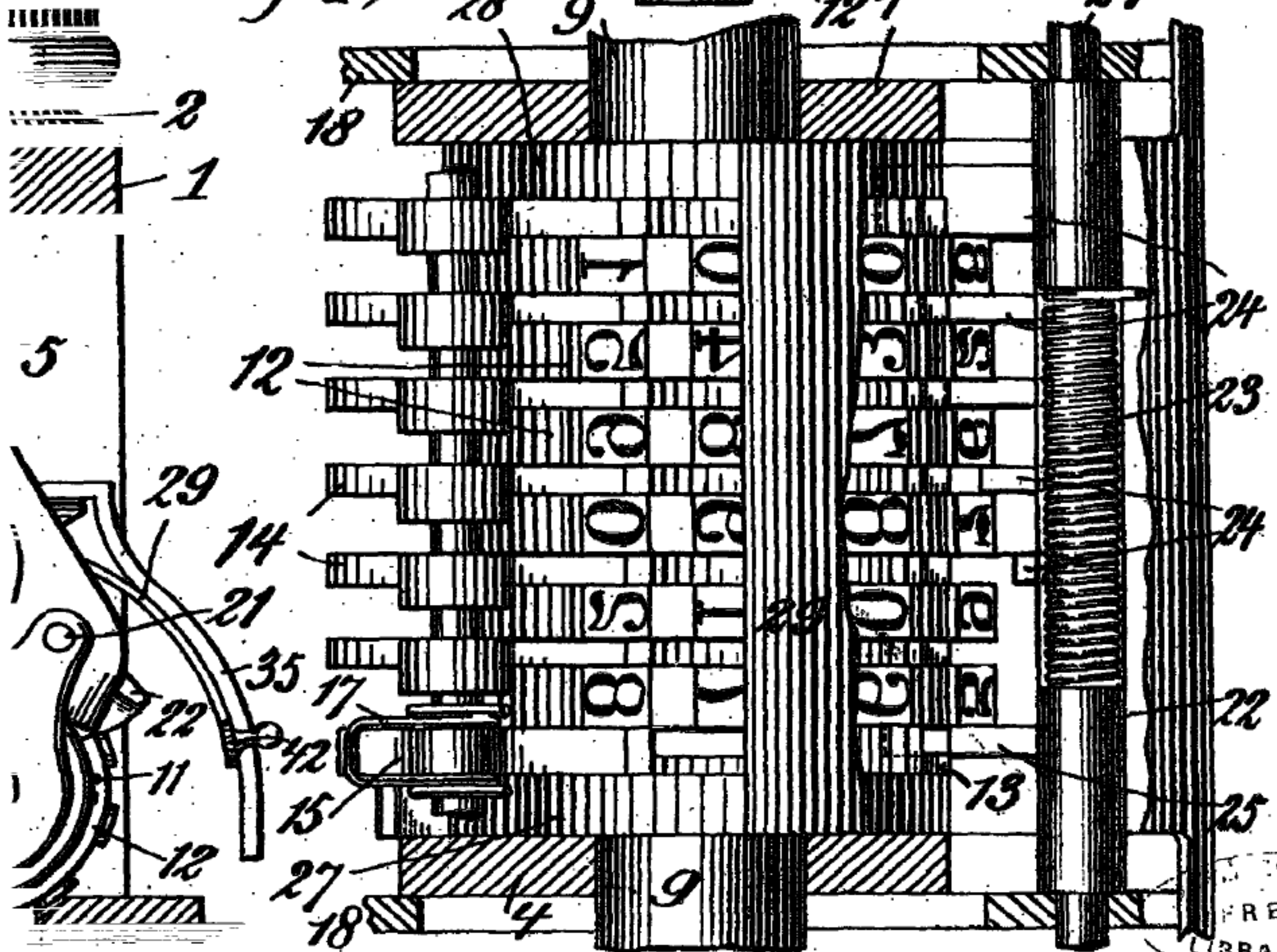


Fig. 4,



[This Drawing is a reproduction of the Original on a reduced scale.]

Fig. 5

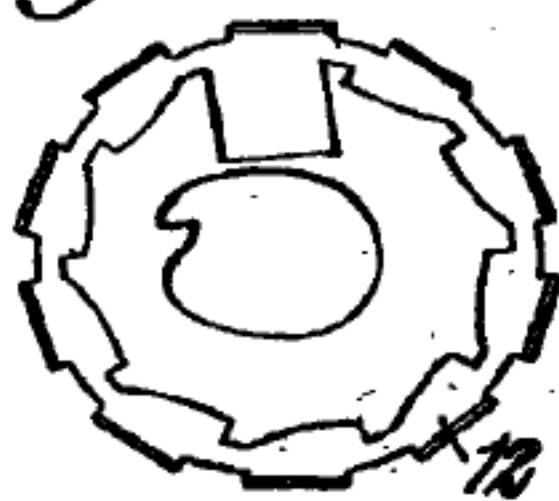


Fig. 6

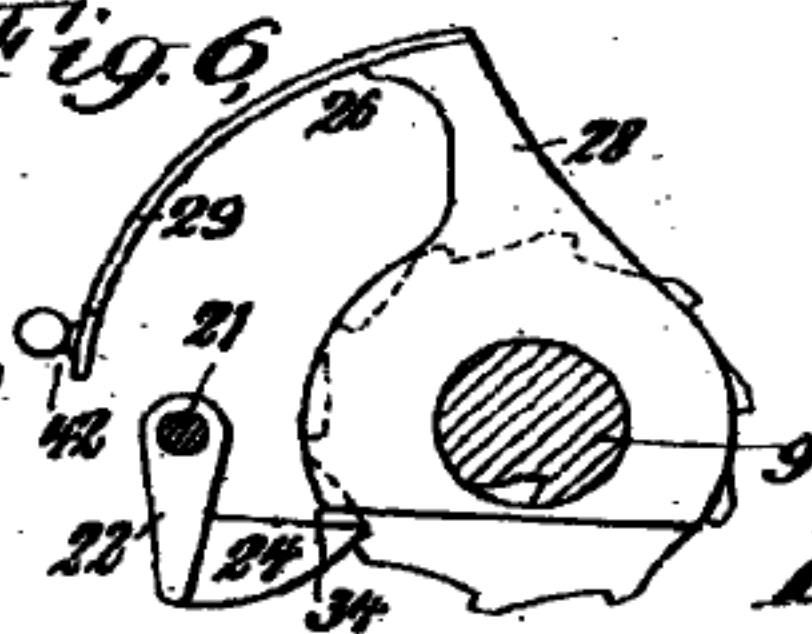


Fig. 7



Fig. 8

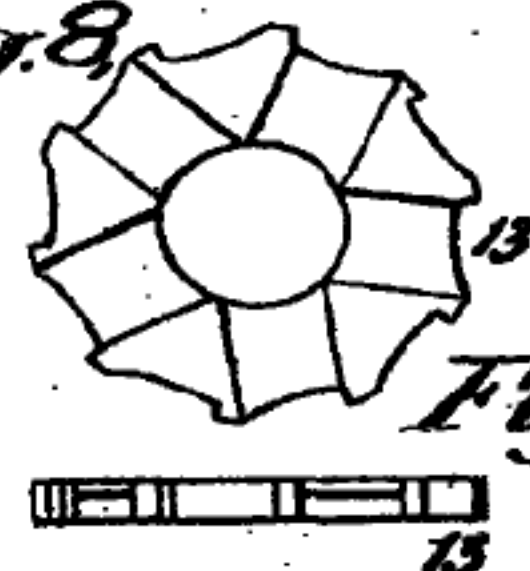


Fig. 9

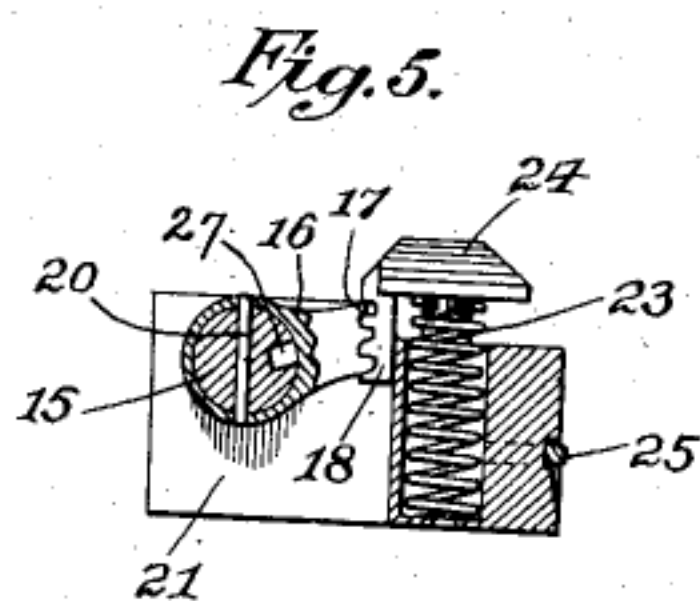
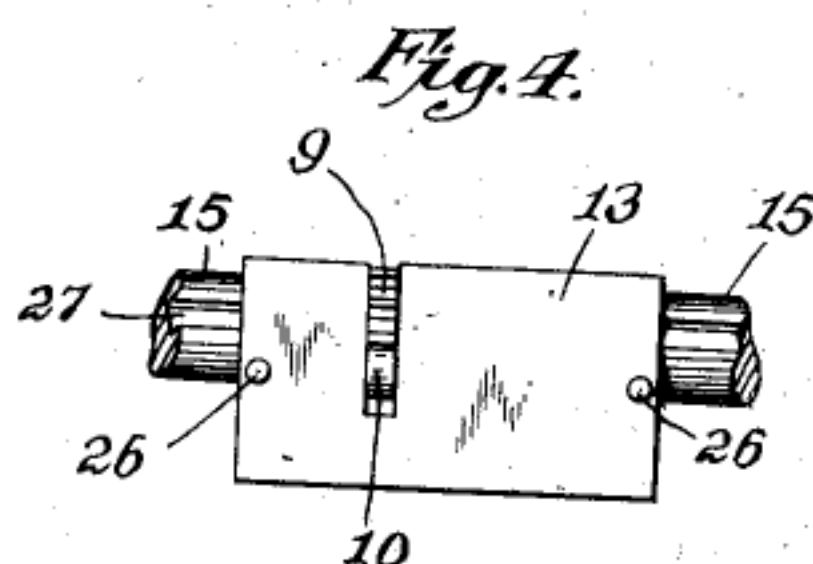
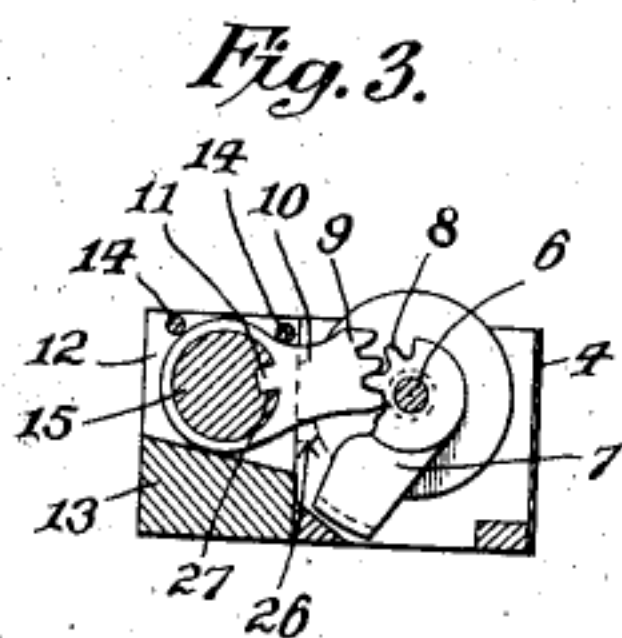
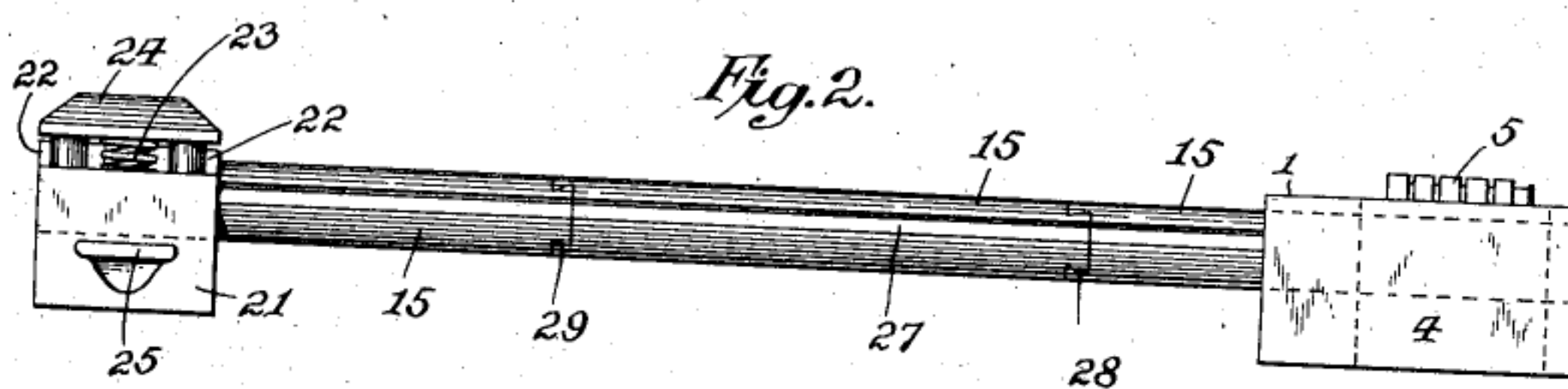
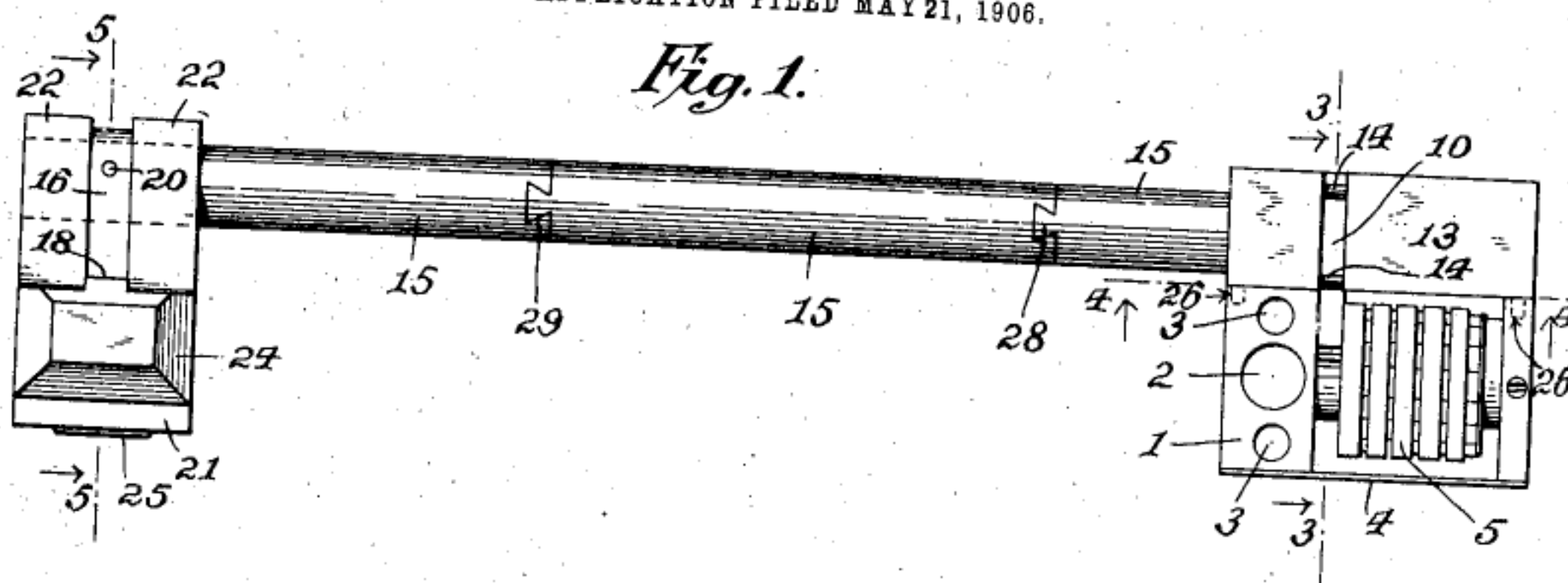


NEXT ITEM

No. 834,556.

PATENTED OCT. 30, 1906.

E. G. BATES.
PLUNGER OPERATING NUMBERING MACHINE.
APPLICATION FILED MAY 21, 1906.



Attest:
Edgeworth
Beatrice Morris

Inventor:
EDWIN G. BATES
by *G. Warren Wright*
Att'y.

UNITED STATES PATENT OFFICE.

EDWIN G. BATES, OF NEW YORK, N. Y., ASSIGNOR TO THE BATES
MACHINE COMPANY, A CORPORATION OF NEW JERSEY.

PLUNGER-OPERATING NUMBERING-MACHINE.

No. 834,556.

Specification of Letters Patent.

Patented Oct. 30, 1906.

Application filed May 21, 1906. Serial No. 317,900.

To all whom it may concern:

Be it known that I, EDWIN G. BATES, a citizen of the United States, residing at New York city, New York, have invented certain new and useful Improvements in Plunger-Operating Numbering - Machines, of which the following is a clear, full, and exact description.

The object of this invention is to provide a plunger-operated numbering-machine—such, for example, as shown in my United States Patent No. 676,084, dated June 11, 1901—with a simple and efficient means for operating the same from a plunger located at a distance from the machine, but adapted for operation by the printing motion.

In carrying out this invention I make use of a block carrying a means for operatively engaging the pawl-plate of the machine and I provide a shaft preferably slidable through the block and controlling the engaging means in the block. I prefer to make this shaft in sections coupled together, as by dovetailed slots and projections. To the other end of the shaft I attach another engaging means, as by a pin, this engaging means being located in a plunger-block carrying the ordinary spring-pressed plunger, carrying a rack or other known engaging means for operatively connecting the plunger to the pinned engaging means on the shaft. I prefer to provide the slidable block with ready means for attaching to the frame of the numbering-machine, and I prefer for this purpose to provide pins on the block to engage the holes in the frame, which are usually engaged by the pins of the side plates, shown in the patent before described.

My invention will be set forth in the claims. Figure 1 is a plan of my improved device. Figure 2 is a front elevation of the same. Figure 3 is a section on line 3 3, Fig. 1. Figure 4 is a front plan of the block removed from the numbering-machine; and Fig. 5 is a section on line 5 5, Fig. 1.

As shown on the drawings, the numbering-machine of the patent hereinbefore referred to is shown without a plunger, the same being removed, leaving exposed the spring-recess 2 and the guide-recesses 3 in the frame 1. The machine is also provided with numbering-wheels 5 of ordinary construction, and one side plate 4 is shown as retained on the machine in the front. A main shaft 6 carries

the swing-arm 7 of the pawl-plate, which is shown as provided with operating-teeth 8.

The block 13 is provided with a slot 12, in which is held an engaging means for the teeth 8 on the pawl-plate. This engaging means consists of an arm 10 with teeth 9 at its end and has a central opening for the shaft 15, provided with an inwardly-turned projection 11, fitting the keyway 27 in the shaft. Pins 14 serve to prevent the removal of the arm 10, but allow it a slight motion when not engaged by the shaft, so that the shaft may readily find its way through the central opening of the arm. Pins 26 on the face of the block are adapted to fit into the openings for the side plate in the manner shown in Fig. 1.

The plunger is of the general construction of the patent before referred to, and consists of the slotted block 21, carrying a spring 23, and the usual guide-pins 22, secured by pin 25. From the plunger 24 extends a rack 18, constituting an operating means for oscillating the shaft, to which shaft 15 there is secured, as by a pin 20, an arm 16, provided with teeth 17, engaging the rack 18.

The shaft 15 is composed of a number of similar sections, one end 29 of each section being dovetailed to form a groove and the other end having a dovetailed projection 28 upon it.

In operation the parts are locked in a frame, as usual, and upon the depression of the plunger-head 24 the rack 18 will oscillate the arm 16, rock the shaft 15, and with it the arm 10 to move the pawl-plate 7 in the usual manner and as described in my aforesaid patent.

Though I have shown but one block and numbering-machine in the drawings, it will be obvious to one skilled in the art that a number of such blocks and machines may be placed on a single shaft.

What I claim as my invention is—

1. A frame, wheels, a shaft therefor, and a pawl-plate carried thereby, an operating means carried by the plate, a block adjacent to the side of the machine and parallel with the axis of its wheel-shaft, carrying an operating means engaging said first operating means, a rod independent of the wheel-shaft, engaging said second operating means and carried by the block, and a plunger and frame, said plunger carrying a third operating means and a fourth operating means engaged by said rod and engaging said third operating means,

said rod in operative position of the parts being slidable through one of the operating means engaged by it.

2. A frame, wheels and a pawl-plate carried thereby, an operating means carried by the plate, a block carrying an operating means engaging said first operating means, a rod engaging said second operating means and a plunger and frame, said plunger carrying a third operating means and a fourth operating means engaged by said shaft and engaging said third operating means, said rod being slidable through one of the operating means engaged by it, said rod being in sections and coupling means between the sections.

3. A frame, wheels and a pawl-plate carried thereby, an operating means carried by the plate, a block carrying an operating means engaging said first operating means, a rod engaging said second operating means and a plunger and frame, said plunger carrying a third operating means and a fourth operating means engaged by said shaft and engaging said third operating means, said rod being slidable through one of the operating means engaged by it, a pin passing through said fourth operating means, a keyway in the shaft, said second operating means having an interior opening, and an inwardly-projecting pin engaging the keyway in the shaft.

4. A frame, wheels and a pawl-plate carried thereby, an operating means carried by the plate, a block carrying an operating means engaging said first operating means, a rod engaging said second operating means and a plunger and frame, said plunger carrying a third operating means and a fourth operating means engaged by said shaft and engaging said third operating means, said rod being slidable through one of the operating means engaged by it, one of the shaft-operating means having a central opening and an inwardly-projecting pin, the shaft having a keyway engaged thereby.

5. A frame, wheels and a pawl-plate carried thereby, an operating means carried by the plate, a block carrying an operating means engaging said second operating means, a rod engaging said second operating means and a plunger and frame, said plunger carrying a third operating means and a fourth operating means engaged by said shaft and engaging said third operating means, said rod being slidable through one of the operating means engaged by it, said block and said machine-frame being so secured that when not locked up they can be separated from one another, by merely moving one relatively to the other.

6. A frame, wheels and a pawl-plate carried thereby, an operating means carried by the plate, a block carrying an operating means engaging said second operating means, a rod engaging said second operating means

and a plunger and frame, said plunger carrying a third operating means and a fourth operating means engaged by said shaft and engaging said third operating means, said rod being slidable through one of the operating means engaged by it, said block and said machine-frame being so secured that when not locked up they can be separated from one another, by merely moving one relatively to the other, said block having projecting pins and said machine-frame having holes to be engaged thereby.

7. A frame, wheels and a pawl-plate carried thereby, an operating means carried by the plate, a block carrying an operating means engaging said first operating means, a rod engaging said second operating means and a plunger and frame, said plunger carrying a third operating means and a fourth operating means engaged by said shaft and engaging said third operating means, said rod being slidable through one of the operating means engaged by it, one of the shaft-operating means having a central opening and an inwardly-projecting pin, the shaft having a keyway engaged thereby, said operating means being mounted in the block so as to have a free limited motion therein when not engaged by said rod.

8. A frame, wheels and a pawl-plate carried thereby, an operating means carried by the plate, a block carrying an operating means engaging said first operating means, a rod engaging said second operating means and a plunger and frame, said plunger carrying a third operating means and a fourth operating means engaged by said shaft and engaging said third operating means, said rod being slidable through one of the operating means engaged by it, the operating means of the block having a projecting arm extending outwardly and having a toothed outer end for engagement with the operating means on the pawl-plate.

9. A frame, wheels, a shaft therefor, and a pawl-plate carried thereby, an operating means carried by the plate, a removable block carrying an operating means engaging said first operating means, a rod independent of the wheel-shaft and located in said block and engaging said second operating means, and a plunger and frame, said plunger carrying a third operating means and a fourth operating means engaged by said rod and engaging said third operating means, said rod in operative position of the parts being slidable through one of the operating means engaged by it, and detachable securing means between the block and frame.

Signed at New York city this 19th day of May, 1906.

EDWIN G. BATES.

Witnesses:

B. B. CONRAD,
CARRIE E. WYLIE.

NEXT ITEM

No. 850,894.

PATENTED APR. 23, 1907.

E. G. BATES.
NUMBERING MACHINE PLUNGER.
APPLICATION FILED MAY 21, 1906.

Fig. 1.

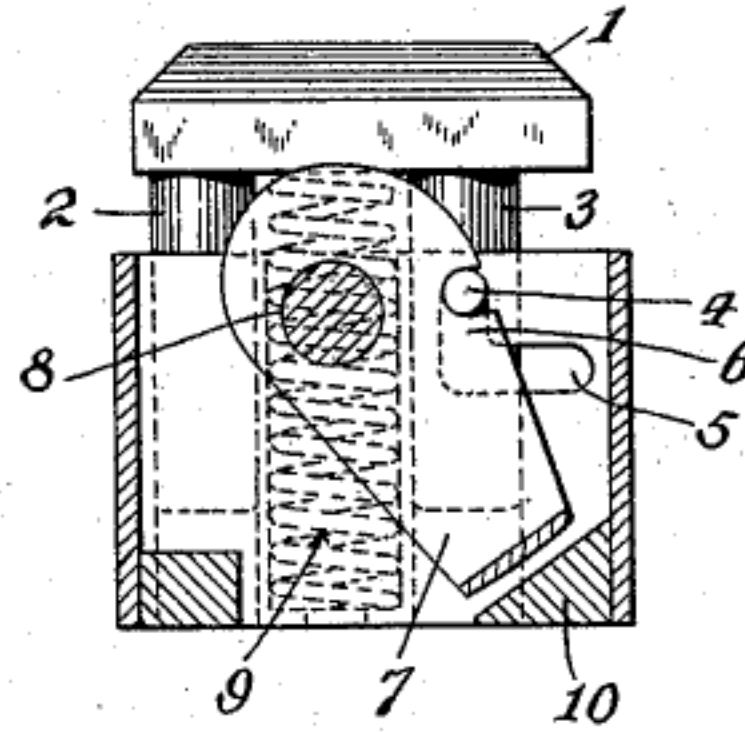


Fig. 2.

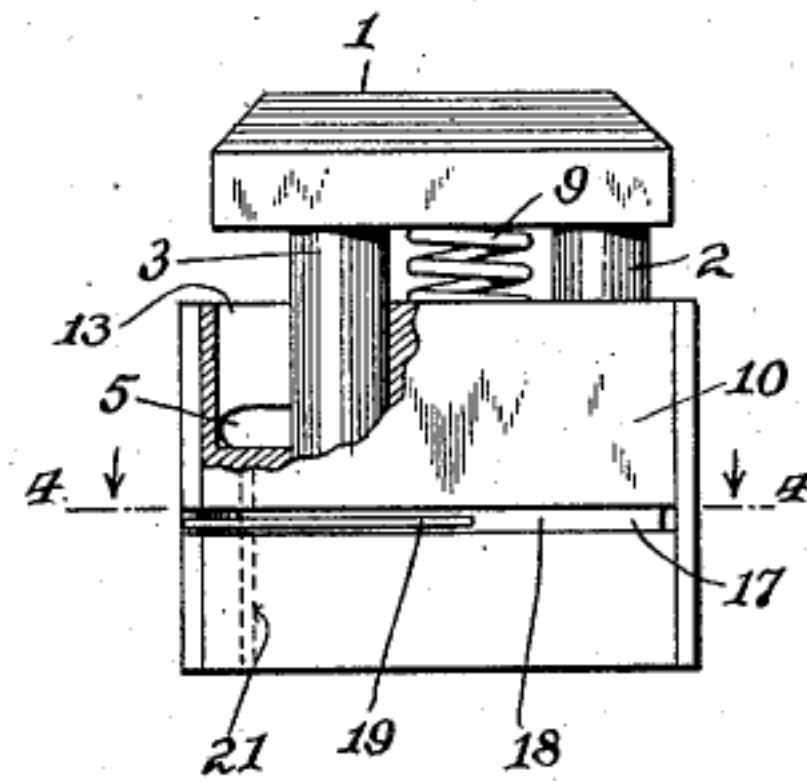


Fig. 3.

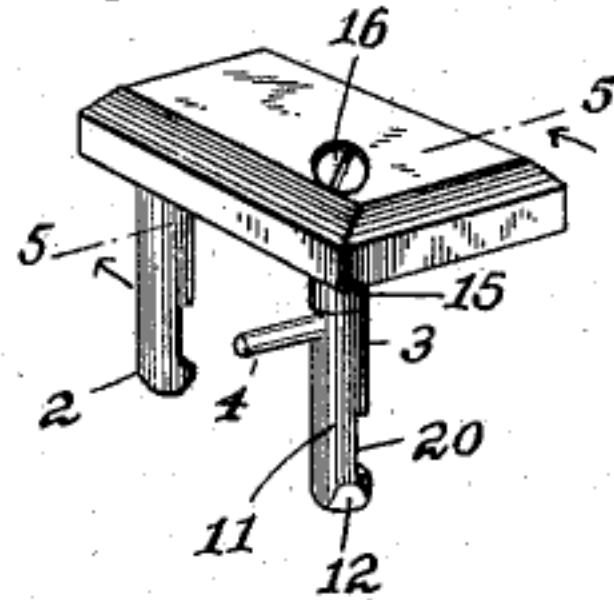


Fig. 4.

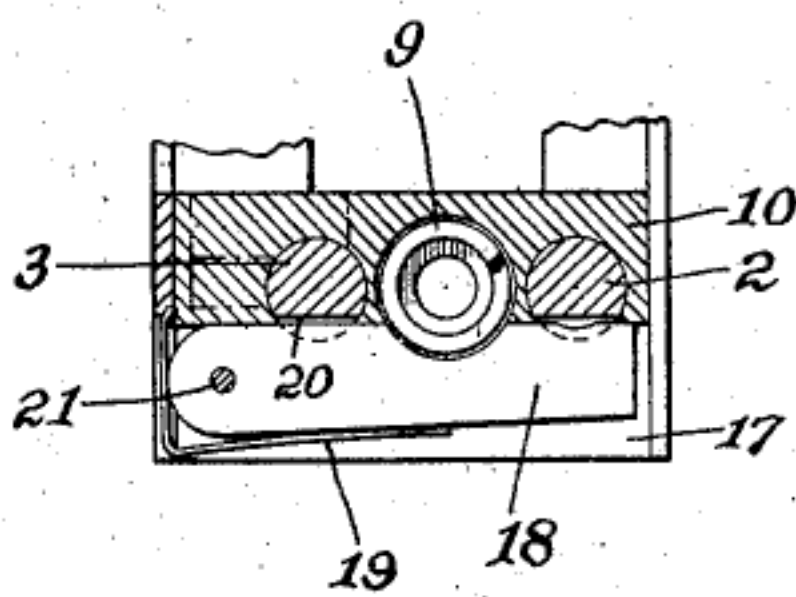
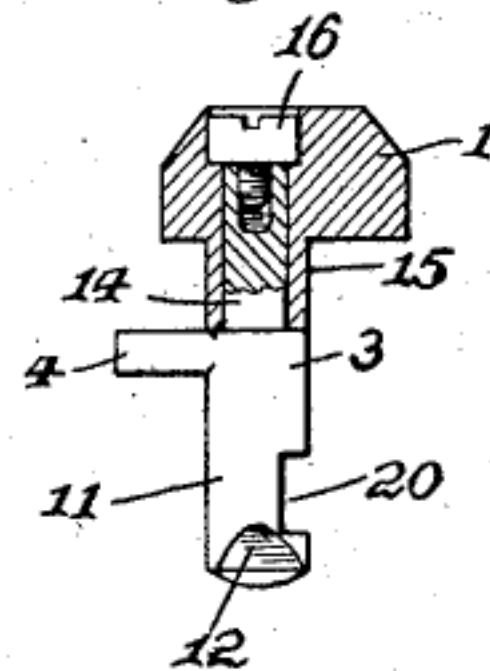


Fig. 5.



Attest:
Edgeworth Burns
Beatrice Morris

Inventor:
EDWIN G. BATES
by *F. Warren Wright* Att'y.

UNITED STATES PATENT OFFICE.

EDWIN G. BATES, OF NEW YORK, N. Y., ASSIGNOR TO THE BATES MACHINE COMPANY, A CORPORATION OF NEW JERSEY.

NUMBERING-MACHINE PLUNGER.

No. 850,894.

Specification of Letters Patent.

Patented April 23, 1907.

Application filed May 21, 1906. Serial No. 317,899.

To all whom it may concern:

Be it known that I, EDWIN G. BATES, a citizen of the United States, residing at New York city, New York, have invented certain new and useful Improvements in Numbering-Machine Plungers, of which the following is a clear, full, and exact description.

The object of this invention is to provide a simple, efficient, and convenient means for operating the pawl-plate of plunger-operated typographic numbering-machines which will enable the ready removal of the plunger and the disengagement of its engaging means from the pawl-plate and frame of the machine.

In carrying out this invention I provide the usual numbering-machine frame and pawl-plate, together with a plunger having a guide rod or rods capable of limited reciprocation in the frame, and I provide, preferably, an engaging means carried by a guide-rod for operatively engaging the pawl-plate. I provide a means for locking the plunger in place, so that it will have a certain definite movement, which means is preferably made operative or inoperative by the same act which permits engagement or disengagement of the plunger with or from the pawl-plate. I prefer to secure this result by providing a right-angled slot through the wall of the frame and communicating with the guide for a guide-rod of the plunger and by making the guide-rod or part of it rotatable, so that it may be rotated to cause an engaging pin carried by the rod to be radially moved to occupy a position through the wall to engage the rack-plate or to occupy a position in a channel entirely within the frame and open to the top thereof which will allow it to be projected outside of the frame for the removal of the plunger. By the same action of disengaging the pin from the plate I cause a notched part of the rod to automatically unlock a retaining means which ordinarily limits the oscillation of the plunger. This automatic means I prefer to construct as a pivoted plate fitting into the notch of the rod or rods, so that upon the oscillation of a rod the unnotched periphery of the rod will move the plate out of the notch that the spring of the plunger may eject the same.

My invention will be set forth in the claims.

In the accompanying drawings, Figure 1

represents a sectional side elevation of my improved device, the section being taken between the pivoted arm of the rack-plate and the adjacent number-wheel, which latter is not shown. Fig. 2 is an end elevation of Fig. 1 from the plunger end of the machine. Fig. 3 is a perspective view of the removable plunger. Fig. 4 is a transverse section on the line 4 4, Fig. 2; and Fig. 5 is a detail, partly in section, of the rotatable guide-rod.

As shown in the drawings, the plunger-head 1 is provided with two guide-rods 2 3, guide-rod 2 being permanently secured to the head and guide-rod 3 being journaled in a bushing 15, secured to the head, which head may be formed with a recess to enable a screw 16 to secure the post 3 in vertical position in the head. The guide-rod 3 is formed of a part 11, having an oblique lower end 12. A notch 20 is located above the end 12. A pin 4 extends at right angles to the axis of the rod, while an upper part 14 extends through the bushing 15 and is secured by the screw 16. The frame 10 of the machine is provided with two guide channels or recesses for the rods 2 and 3, between which is a recess for a spring 9, which normally tends to move the plunger away from the frame.

I prefer to form a transverse slot 17 in the frame at right angles to the position occupied by the rods 2 and 3, which slot opens into at least a part of the guide channels or recesses for such rods. In the slot 17 I mount a locking-blade 18, securing it by a pivot 21 and attaching to the frame a spring 19, which tends always to move the blade inward.

The pawl-plate 7 is pivoted freely upon the main shaft 8, as in most machines of this character, and is provided with a slot which may be engaged by the pin 4 of the plunger guide-rod. This slot is preferably formed in the edge of the pawl-plate.

I provide a vertical opening extending from the top of the machine-frame downwardly and opening at one end to the guide-channel for the rotatable rod 3, which opening 13 terminates in an opening or slot 5 at right angles to itself which passes through the wall of the frame. The inner end of the slot 5 thus formed is open to a vertical opening 6, extending upward and through into the guide for the rod 3, but closed at the top, which closed top forms an abutment.

In operation to assemble the machine the

rotatable rod 3 is rotated as by a screw-driver engaging the slotted head 16, so that the pin 4 will be parallel with the slot 13, when the entire plunger will be forced down until the notches 20 are opposite to the locking-blade 18. Then the screw 16 will be turned, and with it the rotatable post, so that the pin 4 will be protruded through the opening 5 and into the slot of the pawl-plate 7. Upon releasing the plunger-head the spring 9 will raise it until the pin 4 is stopped by the closed end of the vertical slot 6. In doing so the pin 4 will of course swing the pawl-plate to the right, as shown in Fig. 1, to operate the number-wheel mechanism. (Not shown.) When compressed as in printing, the plunger in moving into the frame will rotate the plate 7 in the contrary direction, as will be obvious. To remove the plunger, it will only be necessary to insert a screw-driver in the slotted head 16, depress the plunger-head to the bottom of the stroke, and turn the rotatable rod until the pin is parallel with the opening 13, and withdraw the driver and all pressure, when the spring 9 will eject the plunger.

I claim as my invention—

1. A numbering-machine frame, a pawl-plate provided with a slot, in combination with a plunger, a guide-rod therefor, a spring, said frame having a recess for said rod, and having an opening through the same substantially at right angles to the recess, a pin on said rod engaging said slot in the plate, said opening being closed at the top, and means to rotate said pin in a horizontal plane with said rod as the axis.

2. A numbering-machine frame, a pawl-plate provided with a slot, in combination with a plunger, a guide-rod therefor, a spring, said frame provided with a recess for said rod, and having an opening through the frame substantially at right angles to the recess, a pin on said rod engaging said slot in the plate, said opening being closed at the top, means to rotate said pin, said means comprising a rotatable stud acting on said guide-rod.

3. A numbering-machine frame, a pawl-plate, in combination with a plunger having a guide-rod in the frame, said rod carrying an engaging means for operatively engaging the pawl-plate, said guide-rod being rotatable and adapted upon its rotation to engage or disengage said engaging means from the pawl-plate.

4. A numbering-machine having a frame, a pawl-plate, a plunger and means connecting the pawl-plate and plunger, in combination with a notched guide-rod in said frame, a locking means in the frame and engaging the notch of the rod, said rod being rotatable and adapted upon its rotation to automatically release the locking means.

5. A numbering-machine frame, a pawl-plate, in combination with a plunger having a guide-rod in the frame, said rod carrying an engaging means for operatively engaging the pawl-plate, said guide-rod being rotatable and adapted upon its rotation to engage or disengage said engaging means from the plunger, a locking means in the frame and engaging a notch in the guide-rod, and means for automatically disengaging the locking means upon the rotation of the rod.

6. A numbering-machine frame, a pawl-plate provided with a slot, in combination with a plunger, a spring, said frame having a substantially closed recess for said plunger, and having an opening through the frame substantially at right angles to said recess, a pin on said plunger engaging said slot in the plate, in combination with means for inserting the plunger into the case with the pin below its surface and at least partially within the case and in position where it may be caused to engage the pawl-swing slot, said pin being located normally below said surface of the case.

Signed at New York city this 19th day of May, 1906.

EDWIN G. BATES.

Witnesses:

B. B. CONRAD,
CARRIE E. WYLIE.

NEXT ITEM

UNITED STATES PATENT OFFICE.

EDWIN G. BATES, OF NEW YORK, N. Y., ASSIGNOR TO THE BATES MACHINE COMPANY, A CORPORATION OF NEW JERSEY.

NUMBERING-MACHINE.

No. 850,895.

Specification of Letters Patent.

Patented April 23, 1907.

Application filed January 26, 1907. Serial No. 354,188.

To all whom it may concern:

Be it known that I, EDWIN G. BATES, a citizen of the United States, residing at New York city, New York, have invented certain new and useful Improvements in Numbering-Machines, of which the following is a clear, full, and exact description.

This invention relates to numbering-machines, and is applicable to machines known as "typographic" or "printers'" machines, which may be locked up with type, to hand-numbering or desk-machines, and to numbering-heads adapted for use on rotary presses. In this specification I will particularly describe my invention as applied to this latter class of machine.

The prime object of this invention is to produce a numbering-machine which will have a pawl-swing that may be independently disconnected from the machine without disturbing the wheels, and preferably to also allow the removal of the operating means, so that the machine may be left with wheels and frame substantially unencumbered and any part individually repaired, cleaned, adjusted, or oiled, as may be necessary. Incidentally I secure a machine that can be more readily assembled in the shop than could heretofore be done.

My invention will be more particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a front elevation of one form of my improved machine. Fig. 2 is a plan of the same. Fig. 3 is an end elevation. Fig. 4 is a sectional side elevation. Fig. 5 is a perspective view of the independently-removable pawl-swing.

As shown in the drawings, the frame 1 is formed of an attachment-base 2 for attachment to the printing-press shaft when the machine is a numbering-head. The frame 1 has two upstanding end plates 3, each supporting an interior portion or plate 4, two adjacent plates 3 and 4 in plan being U-shaped and all having circular openings in line with each other.

A tubular shaft 5, of a length to reach between the inner portions 4 of the U of the frame, has mounted upon it the number-wheels 6, with their attached ratchets 7, of ordinary construction, with or without drop-ciphers. I have shown in this application no drop-ciphers. Therefore the shaft 5 may have an ungrooved outer surface. A set-

screw 8 through one of the portions 4 may serve to hold the tubular shaft 5 and wheels in place.

The end portions 3 are formed with restricted mouths 9, forming entrances to their bearings, and the pawl-swing 10 is formed with two arms 11, each centrally bored, within which bore of each arm there may be a key 12, if desired. To the sides of the arm there are provided bushings or projections 13, having a cylindrical bore and cylindrical or outer surface fitting the bore in the arms 3. The sides of the projections are slabbed, as at 14, so as to produce a short diameter of the width of the restricted mouth 9. Consequently the pawl-swing on being turned at about right angles to its position in Fig. 3 can be readily inserted or removed and when inserted locked in position by a partial rotation of the swing. It never oscillates enough in practice to become dislodged. The operating-shaft 15 has a slot or keyway 16 to engage the keys of the pawl-swing, so that its oscillation, secured in the ordinary manner from cams or the like, will be transmitted to the swing to cause it to intermittently advance the number-wheels.

A dovetailed opening 18 at the base of the machine serves to attach it to the press-shaft in the usual manner. The pawls 19 and their springs 20 are the ordinary retaining-pawls common in this class of machine.

The pawl-swing carries the stepped pawl-plate 22 on a shaft 23 and is provided with a spring 24 to keep the plate always in contact with the ratchets.

What I claim is—

1. A numbering-machine comprising a frame, wheels, a pawl-swing, and pawls therefor means for supporting the swing independently of the wheels, an operating-shaft connected with said swing but removable independently of the swing and wheels.

2. A numbering-machine comprising a frame, number-wheels, a pawl-swing having arms and pawls therefor, means for moving the pawl-swing, portions of said frame lying between the arms of the pawl-swing to which portions said wheels are revolvably secured.

3. A numbering-machine comprising a frame, wheels, a pawl-swing, and pawls therefor, means for supporting the swing independently of the wheels, in combination with a hollow shaft on which said wheels are

mounted, an operating-shaft connected with said swing but removable independently of the swing and wheels.

4. A numbering-machine comprising a frame, number-wheels, a pawl-swing having arms and pawls therefor, means for moving the pawl-swing, portions of said frame lying between the arms of the pawl-swing to which portions said wheels are revolubly secured, and shaft means supporting the swing independently of the wheels.

5. A numbering-machine comprising a frame, number-wheels, a pawl-swing and pawls therefor, means for moving the pawl-swing, portions of said frame, a hollow shaft on which the wheels are supported, itself supported by said frame portions, and shaft means supporting the swing independently of the wheels and tubular shaft.

6. A numbering-machine comprising a frame, number-wheels, a pawl-swing having arms and pawls therefor, means for moving the pawl-swing, portions of said frame lying between the arms of the pawl-swing to which portions said wheels are revolubly secured, said frame having exterior portion between one of which and one of the wheel-supporting portions an arm of the pawl-swing is pivotally supported.

7. A numbering-machine comprising a frame, number-wheels, a pawl-swing having arms and pawls therefor, means for moving the pawl-swing, portions of said frame lying between the arms of the pawl-swing to which portions said wheels are revolubly secured, said frame having exterior portion between one of which and one of the wheel-supporting portions an arm of the pawl-swing is pivotally supported so as to be independently removable.

8. A numbering-machine comprising a frame, number-wheels, a pawl-swing having arms and pawls therefor, means for moving the pawl-swing, portions of said frame lying between the arms of the pawl-swing to which portions said wheels are revolubly secured, said pawl-swing having an arm, a projection thereon of two diameters and an opening in the frame for said projection having a restricted receiving-mouth for said projection.

9. A numbering-machine comprising a frame, number-wheels, a pawl-swing having arms and pawls therefor, means for moving the pawl-swing, portions of said frame lying between the arms of the pawl-swing to which portions said wheels are revolubly secured, said pawl-swing having an arm, a projection thereon of two diameters and an opening in the frame for said projection having a restricted receiving-mouth for said projection, an operating means for said swing and an engaging means between the swing and operating means.

10. A numbering-machine comprising a frame, number-wheels, a pawl-swing having

arms and pawls therefor, means for moving the pawl-swing, portions of said frame lying between the arms of the pawl-swing to which portions said wheels are revolubly secured, said pawl-swing having an arm, a projection thereon of two diameters and an opening in the frame for said projection having a restricted receiving mouth for said projection, an operating means for said swing and an engaging means between the swing and operating means, said operating means being removable without dislodging the swing.

11. A numbering-machine comprising a frame, number-wheels, a pawl-swing having arms and pawls therefor, means for moving the pawl-swing, portions of said frame lying between the arms of the pawl-swing to which portions said wheels are revolubly secured, said pawl-swing having an arm, a projection thereon of two diameters and an opening in the frame for said projection having a restricted receiving-mouth for said projection, an operating means for said swing and an engaging means between the swing and operating means, said operating means being removable without dislodging the swing, said operating means comprising a slotted shaft and key therefor located on said arm.

12. A numbering-machine comprising a frame, number-wheels, a pawl-swing having arms and pawls therefor, means for moving the pawl-swing, portions of said frame lying between the arms of the pawl-swing to which portions said wheels are revolubly secured, said pawl-swing having an arm, a projection thereon of two diameters and an opening in the frame for said projection having a restricted receiving-mouth for said projection, an operating means for said swing and an engaging means between the swing and operating means, in combination with a hollow shaft independently supporting the wheels and adapted to maintain its position and the position of the wheels after the removal of the swing and operating means.

13. A numbering-machine comprising a frame, number-wheels, a pawl-swing having arms and pawls therefor, means for moving the pawl-swing, portions of said frame lying between the arms of the pawl-swing to which portions said wheels are revolubly secured, said pawl-swing having an arm, a projection thereon of two diameters and an opening in the frame for said projection having a restricted receiving-mouth for said projection, an operating means for said swing and an engaging means between the swing and operating means, said operating means being removable without dislodging the swing, in combination with a hollow shaft independently supporting the wheels and adapted to maintain its position and the position of the wheels after the removal of the swing and operating means.

14. A numbering-machine comprising a

frame, number-wheels, a pawl-swing having arms and pawls therefor, means for moving the pawl-swing, portions of said frame lying between the arms of the pawl-swing to which
 5 portions said wheels are revolubly secured, said pawl-swing having an arm, a projection thereon of two diameters and an opening in the frame for said projection having a restricted receiving-mouth for said projection,
 10 an operating means for said swing and an engaging means between the swing and operating means, said operating means being removable without dislodging the swing, said operating means comprising a slotted shaft
 15 and key therefor located on said arm, in combination with a hollow shaft independently supporting the wheels and adapted to maintain its position and the position of the wheels after the removal of the swing and operating
 20 means.

15. A numbering-machine comprising a frame, number-wheels, a pawl-swing having arms and pawls therefor, means for moving the pawl-swing, portions of said frame lying
 25 between the arms of the pawl-swing to which portions said wheels are revolubly secured, said frame having two portions U-shaped in plan, of which the inner portions support the wheels and the outer portions the swing.

30 16. A numbering-machine comprising a frame, number-wheels, a pawl-swing having arms and pawls therefor, means for moving the pawl-swing, portions of said frame lying between the arms of the pawl-swing to which
 35 portions said wheels are revolubly secured,

said frame having two portions U-shaped in plan, of which the inner portions support the wheels and the outer portions the swing, a hollow shaft extending between the inner portions and supporting the wheels. 40

17. A numbering-machine comprising a frame, number-wheels, a pawl-swing having arms and pawl therefor, means for moving the pawl-swing, portions of said frame lying
 45 between the arms of the pawl-swing to which portions said wheels are revolubly secured, said frame having two portions U-shaped in plan, of which the inner portions support the wheels and the outer portions the swing, the
 50 outer portions having openings with restricted mouths.

18. A numbering-machine comprising a frame, number-wheels, a pawl-swing having arms and pawls therefor, means for moving the pawl-swing, portions of said frame lying
 55 between the arms of the pawl-swing to which portions said wheels are revolubly secured, said frame having two portions U-shaped in plan, of which the inner portions support the wheels and the outer portions the swing, a hol- 60
 low shaft extending between the inner portions and supporting the wheels, the outer portions having openings with restricted mouths.

Signed at New York city this 24th day of 65
 January, 1907.

EDWIN G. BATES.

Witnesses:

A. N. FONDA,
 CARRIE E. WYLIE.

NEXT ITEM

No. 857,976.

PATENTED JUNE 25, 1907.

E. G. BATES.
NUMBERING AND DATING MACHINE.

APPLICATION FILED JULY 2, 1906.

2 SHEETS—SHEET 1.

Fig. 3.

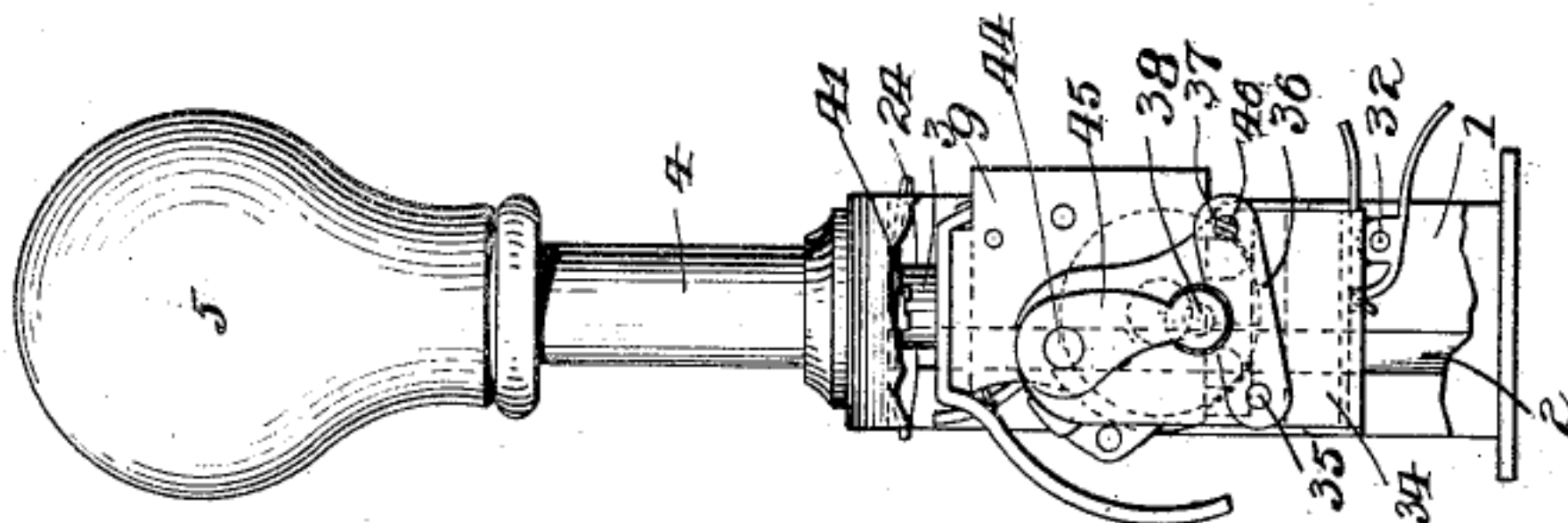


Fig. 2.

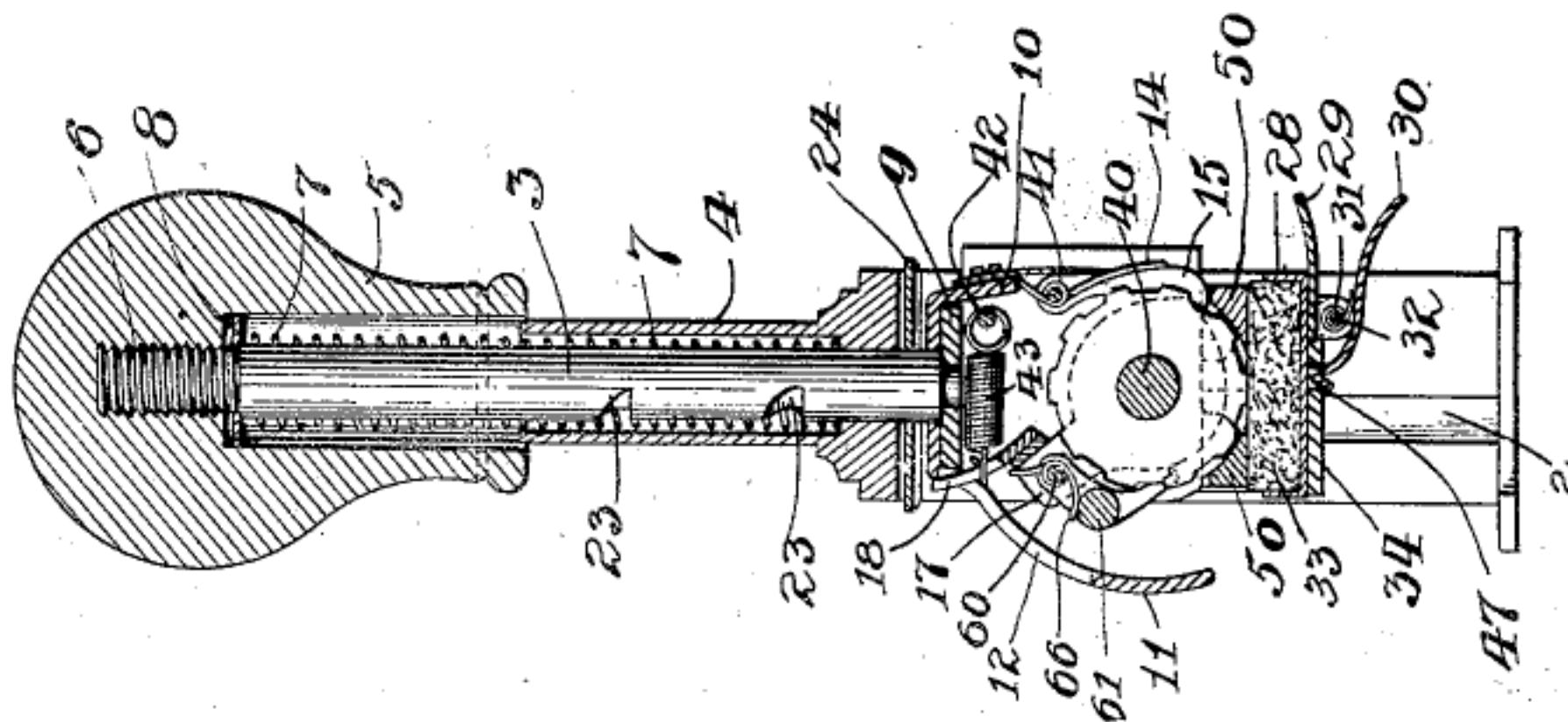
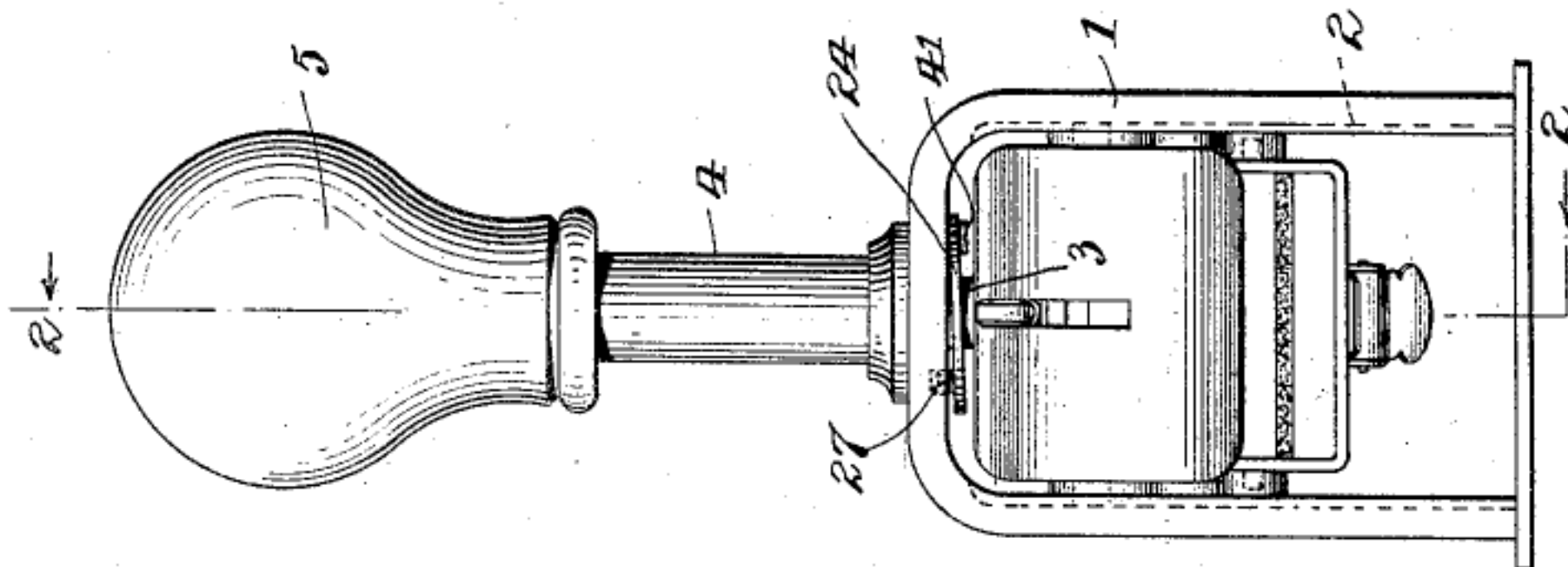


Fig. 1.



Attest:
Edgeworth
R. McJannet

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NUMBERING AND DATING MACHINE.

APPLICATION FILED JULY 2, 1906.

2 SHEETS—SHEET 2.

Fig. 11.

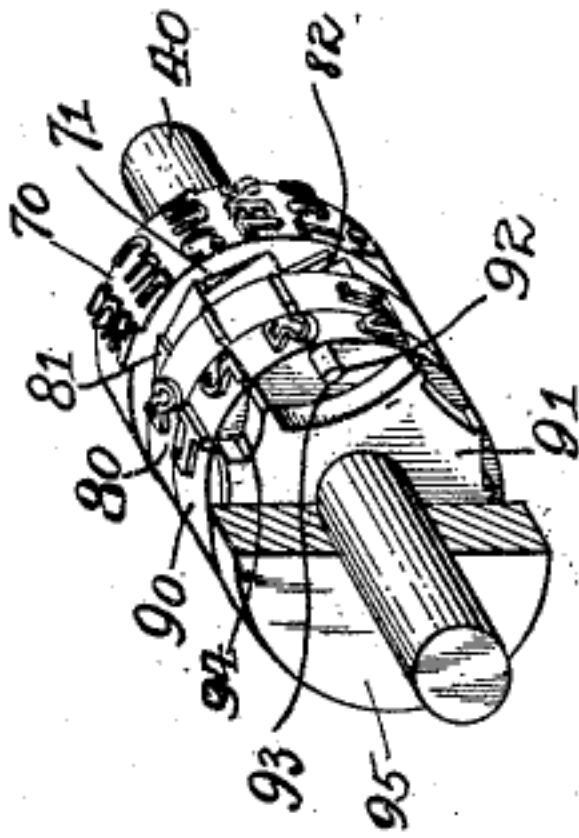


Fig. 12.

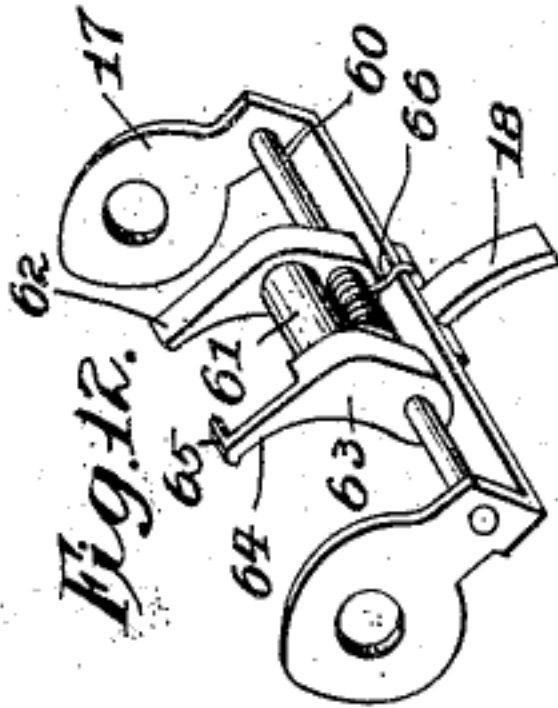


Fig. 10.



Fig. 7.

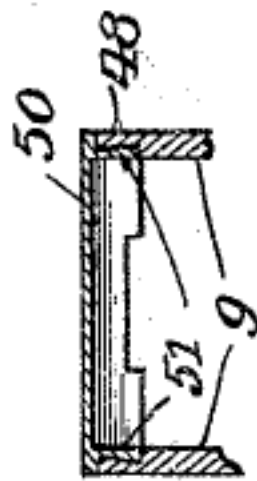


Fig. 9

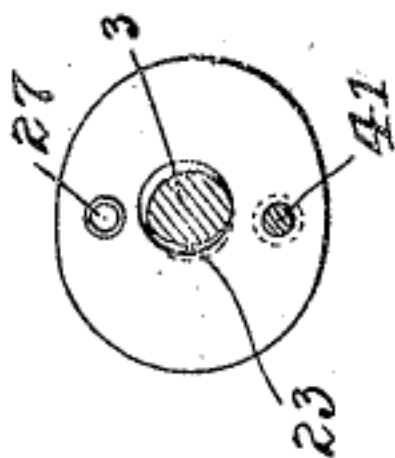


Fig. 8.

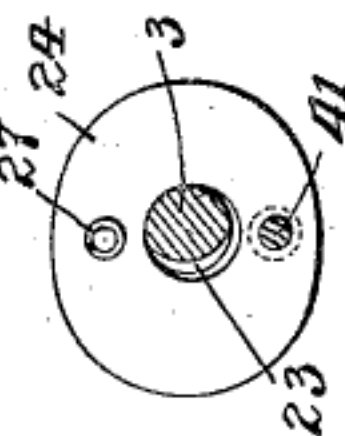


Fig. 5.

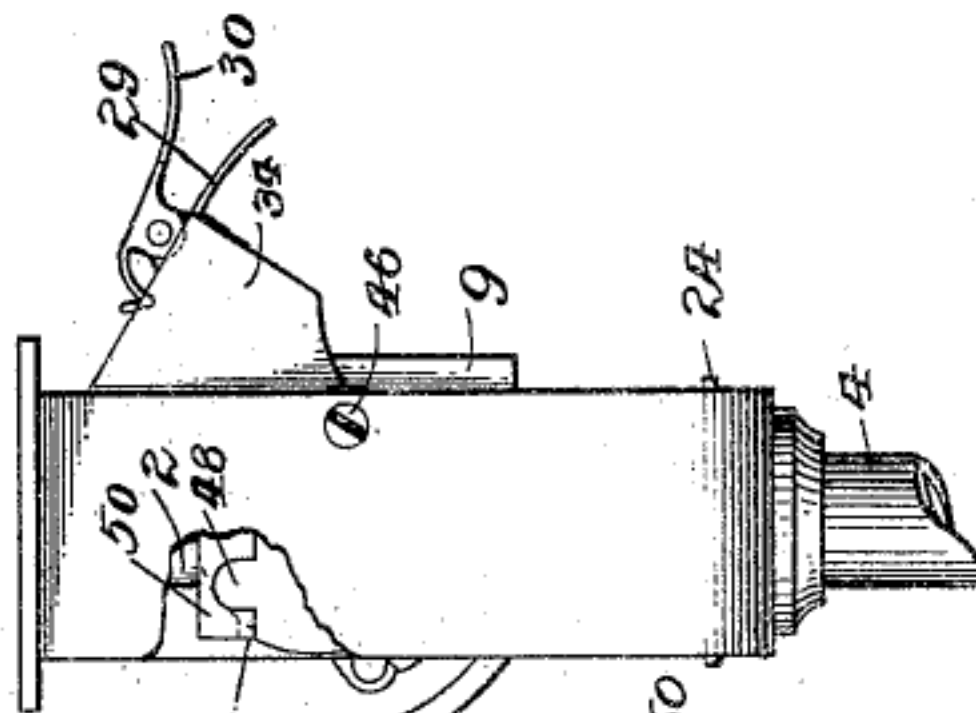


Fig. 4.

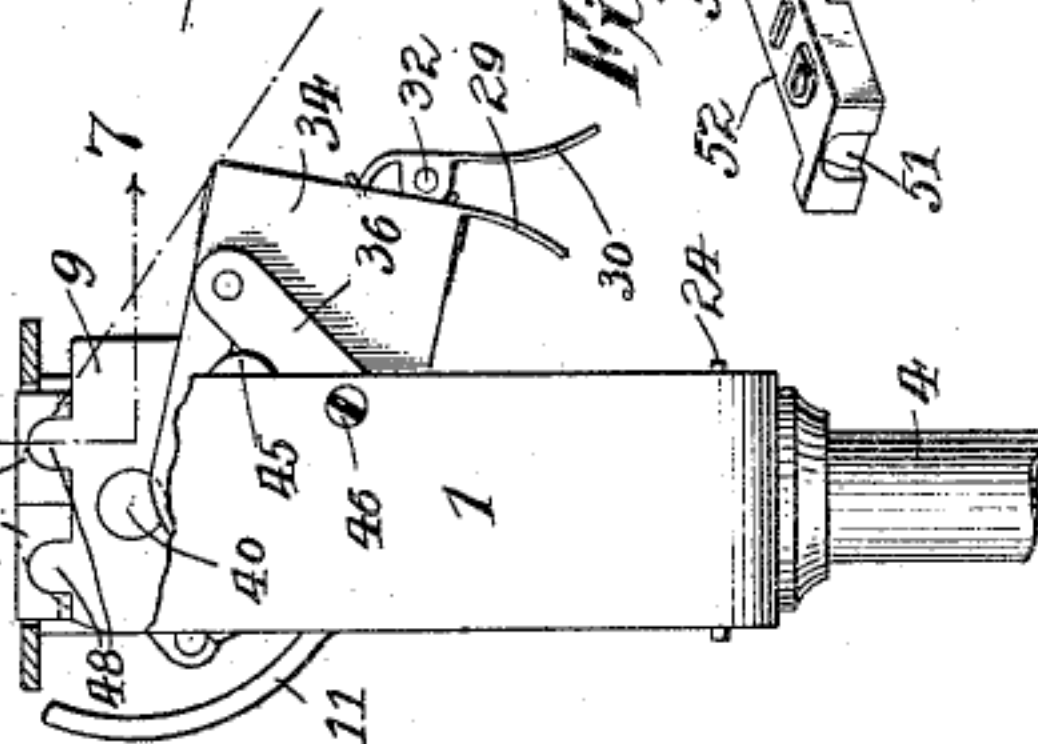
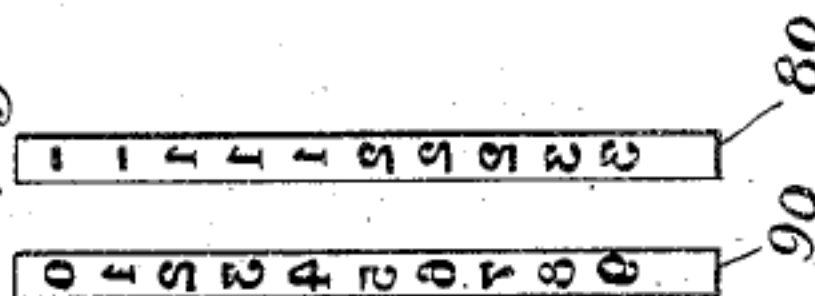


Fig. 13. Fig. 14.



Attest:
Edgeworth
Machine

Inventor:
EDWIN G. BATES.

by *P. Warren Wright*
Atty.

UNITED STATES PATENT OFFICE.

EDWIN G. BATES, OF NEW YORK, N. Y., ASSIGNOR TO THE BATES MACHINE COMPANY, A CORPORATION OF NEW JERSEY.

NUMBERING AND DATING MACHINE.

No. 857,976.

Specification of Letters Patent.

Patented June 25, 1907.

Application filed July 2, 1906. Serial No. 324,304.

To all whom it may concern:

Be it known that I, EDWIN G. BATES, a citizen of the United States, residing at New York city, New York, have invented certain new and useful Improvements in Numbering and Dating Machines, of which the following is a clear, full, and exact description.

This invention relates in general to numbering machines, and particularly that class of numbering machines known as dating machines. Its object is to improve and simplify the construction of such machines, to secure improved operation and use of such a machine, and particularly with reference to improved means for advancing the number wheels and for attaching printing plates adjacent to the functioning characters of said wheels, and further for providing improved means for holding the frame carrying the number wheels in locked position during the attachment of said plates and in other specific improved constructions of machine, as set forth in the claims.

In the drawings, Figure 1 is a front elevation of my improved machine; Fig. 2 is a section on line 2—2 Fig. 1; Fig. 3 is a side elevation with one of the legs of the main frame broken away to show the mechanism; Fig. 4 is a side elevation partly broken away to show the method of detaching one of the printing plates; Fig. 5 is a similar view showing the method of detaching a second additional printing plate; Fig. 6 is a view in perspective of the die plate; Fig. 7 is a sectional view on line 7—7 Fig. 4; Fig. 8 is a detail view showing the retaining disk for the plunger rod in unlocked position; Fig. 9 is a similar view showing the plunger rod as locked; Fig. 10 is a plan view showing the retaining disk for the plunger spring; Fig. 11 is a perspective view showing the arrangement of number wheels and their improved ratchet devices; Fig. 12 is a perspective view of the pawl swing for operating the number wheels; Fig. 13 is a projection of the surface of the unit numbering wheel; and Fig. 14 is a projection of the surface of the tens numbering wheel.

As shown in the drawings, the machine is comprised of the usual U-shaped frame 1 having slide grooves 2, to the upper end of which frame there is provided a tubular ex-

tension 4 through which a plunger rod 3 projects. The rod 3 is of less diameter than the tube 4 and of greater length, and is surrounded by a spring 7 locked in place upon the rod by a yoked washer 8 fitting in a groove below the upper threaded part 6 of the rod. A knob 5 interiorly threaded is in practice screwed down upon the threaded end 6 of the rod 3 and at no time is allowed intimate contact with the spring which contact is prevented by the interposition of the washer 8.

The plunger rod 3 is preferably provided with two notches 23, and immediately below the transverse member of the U frame 1 I provide a locking disk 24 pivoted at 41 to the frame 1, and diametrically opposite the pivot provided with a spring 27 resiliently bearing against the disk 24 and fitting into a recess in the frame 1. The spring 27 is preferably a simple coil spring and the disk 24 is preferably in the shape of a washer.

To the lower end of the rod 3 I secure the numbering wheel frame 9 which is preferably a single piece of metal bent unto U form and of such structure or worked into such condition as to cause the free ends of the U to tend to slightly approach each other through an inherent resiliency of the body of the U frame 9.

Through the U frame 9 I mount the shaft 40 for the number wheel, which shaft is preferably of a length equal to the distance between the two legs of the frame 1, and thus when the machine is assembled non-removable; merely being held in position by the legs of the frame 1. A second shaft 41 is also secured in the frame 9 and carries the detaining pawls 15 provided with a spring 14 of usual construction, while a shaft 42 is also mounted in the frame 9 to one end of which a spring 43, hereafter described, is secured.

Studs 44 on the frame 9 travel in the slots 2 of the frame 1 and on these studs there are mounted levers 45 pivoted at 38 to second levers 36 which are pivoted in the frame 1 by screw 46 engaging threaded holes 37 in the lever 36, while studs 35 are secured to a U-shaped pad-carrying frame 34 provided with a notched opening 47 in its lower face and guided by a groove on its upward extending arms which embrace the studs 44 in the usual manner, so that upon the downward

movement of the frame 9 the studs 35 will be swung on their pivots 37 to rock the pad-carrying arms into the position of Fig. 4.

A pad-carrying clamp 28 is provided having upstanding portions to secure the pad 33, and to this clamp 28 there is secured an extending arm 29 having a pivot 32 on which is mounted a coil spring 31 bearing upon a lever 30 having a nose at one end adapted to engage a notch 47 so that the two arms 29 and 30 may be pressed together to release the nose of the lever 30 from the notch 47 to allow the withdrawal of the pad 33.

The U-shaped frame 9 is provided at its outer ends with projecting lugs 48 having slightly undercut or inclined surfaces, as shown in Fig. 7, while the printing plates 50 are provided with undercut bevel notches 51 on their end surfaces, with a cut-out portion 52 on their inner surfaces and with lettering or the like on their surface 53, so that the plates may be pushed vertically down upon the projections 48 of the U-shaped frame and snapped into place and held by the resiliency of said frame without the use of screws or awkward holding contrivances. These plates 50 preferably meet on their center line, as shown in Fig. 4, and are cut out at 52 to allow for the appearance of the functioning characters of the number wheels between them.

As shown in Fig. 4, when the machine is in the position indicated and in fact in any position in which the pad frame extends substantially as shown in that figure, a screw driver or other instrument may be used as shown in the dot and dash line, for prying the printing plate out of position, in which case the edge of the pad frame will act as a fulcrum for the instrument. If it is desired to remove the other side plate, the machine is preferably moved and locked into the position shown in Fig. 5, when the edge of a guard plate 11 hereinafter described will be in position to act as a fulcrum for an implement to pry off the front printing plate.

The guard plate 11 is provided with a central slot 12 through which the lever 18 directly connected to the pawl swing 17 protrudes and is normally held in the position shown in Fig. 2 by the spring 43, heretofore described. The guard plate 11 is fastened upon the top of the U-frame 9 and is provided with a depending plate 10 in the rear carrying the usual forms of plate pawl retaining springs.

On the shaft 40 for the number wheels I pivotally mount the pawl swing 17 which straddles the number wheel and which carries a rod 60 on which is pivoted a pawl mechanism comprising two right angular pawls connected together by a stud 61, one of said pawls (pawl 62) having a tooth of a width equal to the combined width of the ratchets on the tens and month wheels, while

pawl 63 is provided with a thin blade portion 64 provided with an inwardly turned pawl tooth 65. A spring 66 tends always to move the ends of the pawl toward the shaft 40 of the machine.

The number wheels for a dating machine consist of one wheel 70 having a ratchet wheel 71 provided with 12 divisions of teeth to correspond to the twelve months. The tens wheel 80 is provided with a ratchet wheel 81 having ten teeth and of slightly greater diameter than the month ratchet wheel 71. This ratchet wheel 81 is provided with one deep tooth 82 penetrating farther into its center than do the teeth of the months wheel, so that the pawl 62 when advancing the tens wheel and when in the deep tooth 82, will also advance the months wheel one tooth, but when on the normal teeth of wheel 81 it will ride safely over the months ratchet teeth and not operate the same. The units wheel 90 is provided with a ratchet wheel 91 of greater diameter than the tens ratchet wheel, so that in all instances, except those now described, the tens wheel will remain inoperative upon the operation of the unit wheel. This ratchet 91 is provided at one of its points with a stud or pin 92 in lieu of a ratchet tooth, while a deep recess 93 is bridged beneath said pin 92 for a distance of two teeth. Immediately preceding this notch 93 is a deep tooth 94. The stud 92 is not so long as to interfere with the passage of the blade-like part 64 of the pawl 63. To better understand the operation of these teeth and ratchets I will describe their operation for one month, which is as follows: Assuming the preceding day to have been June 30th, it will be desired to remove the wheels to July 1st. The operator moves the lever 18 downwardly in its slot, which causes the pawl 65 to drop into the notch between the pin 92 and its preceding tooth, to push a unit wheel forward one tooth to indicate June 31st. Now as there is no June 31st it will be necessary to again reciprocate the pawl spring. This time the tooth 65 falls between the pin 92 and its succeeding tooth, while the pawl 62 falls into its deep notch 82, and when in said deep notch it allows the pin 65 to pass beneath the stud 92 without moving the unit wheel, but the tens wheel and the months wheel will together move forward to move the dash #1 into place beside the number 1. Upon the next oscillation of the pawl swing the tooth 65 will again engage the notch 93 but not to the same depth as the pawl 62 will then be on a normal tooth so that the pawl 62 and pawl tooth 65 will each move its wheel one tooth producing—#2 on the tens and 2 on the units. Upon the next reciprocation the tooth 65 will engage a normal ratchet tooth of the unit wheel and so continue until the figure 9 is brought into functioning position during all of which time the second dash of

the tens wheel will have remained in place, but as soon as it is desired to shift the 9 to zero, the tooth 65 will fall into the deep notch 94 and allow the pawl 62 to move the tens wheel one more unit producing the figure 1. The two successive movements also allow the pawl 62 to come into play to shift the two repeated characters 1 forward on their tens wheel, and a like operation takes place for the next rotation of the unit wheel to place the characters 2 and 3 in functioning position. A similar operation for the tens character takes place, but it will be noted that there are only two of these characters, but as shown in the beginning of this operative description when a third shift is to be made after the date 31 the units wheel is not moved and the tens wheel is advanced one point, thus bringing the cycle of operation into proper successive advancement of the characters and of the months. The year wheel 95 is shown diagrammatically in Fig. 11 and may be hand set.

What I claim as my invention is:

1. In a numbering machine a frame, a notched plunger rod, a movable disk on the frame and a resilient friction device between the frame and disk, said disk being a pivoted washer through the center of which the rod passes.

2. In a numbering machine a frame, a notched plunger rod, a movable disk on the frame and a resilient friction device between the frame and disk, said resilient friction device comprising a coiled spring bearing against the washer and located in a recess in the frame.

3. In a numbering machine a frame, a notched plunger rod, a movable disk on the frame and a resilient friction device between the frame and disk, said disk being a pivoted washer through the center of which the rod passes, said resilient friction device comprising a coiled spring bearing against the washer and located in a recess in the frame.

4. A numbering machine having a plurality of printing plates and resilient means for securing them to the machine, said plates abutting against each other on a part of their center line and an opening between the plates, wheels and a shaft therefor said wheels having part of their periphery in said opening.

5. A numbering machine having a reciprocating frame, number wheels and resiliently held printing plate, in combination with a fulcrum carried by the reciprocating frame adapted for use with a tool for forcing the plate out of position.

6. A numbering machine having a reciprocating frame, number wheels and resiliently held printing plate, in combination with a fulcrum carried by the reciprocating frame adapted for use with a tool for forcing the plate out of position, and locking means for

locking the reciprocating part in position with said fulcrum stationary.

7. A numbering machine having a reciprocating frame, number wheels and resiliently held printing plate, in combination with a fulcrum carried by the reciprocating frame adapted for use with a tool for forcing the plate out of position, said fulcrum being permanently located with relation to the said frame.

8. A numbering machine having a reciprocating frame, number wheels and resiliently held printing plate, in combination with a fulcrum carried by the reciprocating frame adapted for use with a tool for forcing the plate out of position, said fulcrum being permanently located with relation to the said frame, and a second fulcrum pivoted to said frame.

9. A numbering machine comprising a reciprocating wheel frame, an ink pad frame operated thereby and having a notch in its surface, an ink pad holder comprising a clamp for the pad, a lever having a nose pivoted on the holder, and a spiral spring between the lever and holder, a stationary arm on the clamp, whereby the arm and lever may be pressed together to place the pad in position and upon their release the nose caused to enter said notch.

10. A dating machine comprising month, units and tens wheels, exterior ratchet wheels attached to the sides of aforesaid wheels, a pawl mechanism, and ratchet means for advancing said tens wheel at a certain time without advancing the unit wheel, said tens and units wheels having their faces adjacent, said month and tens wheels having their ratchets adjacent, and connected pawls therefor.

11. A dating machine comprising month, units and tens wheels, a pawl mechanism, and ratchet means for advancing said tens wheel at a certain time without advancing the unit wheel, a notch between two ratchet teeth on the unit wheel and a pin tooth midway of the notch, a pawl therefor adapted to engage said pin tooth, ordinarily, a deep tooth on the tens wheel adapted to permit said pawl at times to freely ride under said tooth, a pawl operatively connected to first said pawl and operating the tens ratchet.

12. A dating machine comprising month, units and tens wheels, a pawl mechanism, and ratchet means for advancing said tens wheel at a certain time without advancing the unit wheel, a notch between two ratchet teeth on the unit wheel and a pin tooth midway of the notch, a pawl therefor adapted to engage said pin tooth ordinarily, a deep tooth on the tens wheel adapted to permit said pawl at times to freely ride under said tooth, a pawl operatively connected to first said pawl and operating the tens ratchet, the first said

pawl comprising a blade and a nose at an angle thereto.

13. A machine of the kind described having a main frame, a reciprocating head, comprising an inner frame, a shaft therein and wheels on said shaft, a detachable die plate and resilient means for securing it to said inner frame, said plate traveling with said reciprocating head, between the sides of the main frame.

14. A machine of the kind described having a main frame, a reciprocating head, comprising an inner frame, a shaft therein and wheels on said shaft, a die plate and resilient means for securing it to said inner frame, said plate being of a length equal to the width of said inner frame.

15. A machine of the kind described having a main frame, a reciprocating head, comprising an inner frame, a shaft therein and wheels on said shaft, a die plate and resilient means for securing it to said inner frame, said plate being of a length equal to the width of said inner frame, and chambered on its inner under side to accommodate the wheels.

16. A machine of the kind described having a main frame, a reciprocating head, comprising an inner frame, a shaft therein and wheels on said shaft, a die plate and resilient means for securing it to said inner frame, notched end surfaces for the plate and projections on the frame adapted to engage said notched end surfaces.

17. A machine of the kind described having a main frame, a reciprocating head, comprising an inner frame, a shaft therein and wheels on said shaft, a die plate and resilient means for securing it to said inner frame, said resilient means comprising notches and

engaging projections between the plate and frame and the inherent spring of the frame.

18. A machine of the kind described having a main frame, a reciprocating head, comprising an inner frame, a shaft therein and wheels on said shaft, a die plate and resilient means for securing it to said inner frame, said plate being of a length equal to the width of said inner frame, said resilient means comprising notches and engaging projections between the plate and frame and the inherent spring of the frame.

19. A machine of the kind described having a main frame, a reciprocating head, comprising an inner frame, a shaft therein and wheels on said shaft, a die plate and resilient means for securing it to said inner frame, said plate being of a length equal to the width of said inner frame, and chambered on its inner under side to accommodate the wheels, said resilient means comprising notches and engaging projections between the plate and frame and the inherent spring of the frame.

20. A machine of the kind described having a main frame, a reciprocating head, comprising an inner frame, a shaft therein and wheels on said shaft, a die plate and resilient means for securing it to said inner frame, said die plate being chambered on its inner under side to accommodate the wheels, said resilient means comprising notches and engaging projections between the plate and frame and the inherent spring of the frame.

Signed at New York city this 29 day of June, 1906.

EDWIN G. BATES.

Witnesses:

CARRIE E. WYLIE,
BENJAMIN B. CONRAD.

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